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ICONES PLEUROTHALLIDINARUM
VI

SYSTEMATICS OF PLEUROTHALLIS SUBGENUS ANCIPITIA SUBGENUS SCOPULA AND TRISETELLA

ADDENDUM TO PORROGLOSSUM

(ORCHIDACEAE)

Missouri Botanical Garden

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AND

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ADDENDUM TO PORROGLOSSUM

CARLYLE A. LUER

Missouri Botanical Garden

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SYSTEMATICS OF THE SUBGENUS **ANCIPITIA** GENUS **PLEUROTHALLIS** (ORCHIDACEAE)

ABSTRACT

A brief history of the subgenus *Ancipitia* Luer of the genus *Pleurothallis* R. Br. is given and the subgenus is defined. A key to the species is given. Each species is described and illustrated with a black and white drawing, and a distribution map is included for each.

New taxa:
Pleurothallis subgen. **Ancipitia** sect. **Ancipitia**
Pleurothallis subgen. **Ancipitia** sect. **Tetragona** Luer, sect. nov.
Pleurothallis condorensis Luer & Hirtz, sp. nov.
Pleurothallis inornata Luer & Hirtz, sp. nov.
Pleurothallis odobeniceps Luer, sp. nov.
Pleurothallis onagriceps Luer & Hirtz, sp. nov.

From a Venezuelan collection by Hermann Wagener, Professor Reichenbach described *Pleurothallis gratiosa*, the first species attributable to this subgenus, in 1854. It was followed the next year by *P. crocodiliceps*, described from a Colombian collection also by Wagener.

In 1923, Oakes Ames described Costa Rican and Mexican collections of *P. crocodiliceps* as *P. arietina* and *P. nelsonii* respectively. Also in 1923, a collection from Costa Rica by A. M. Brenes was described by Rudolf Schlechter as *P. eumecocaulon*, the third species of the subgenus to be recognized. Ernesto Foldats added the fourth species in 1968 when he described a Venezuelan collection by J. A. Steyermark and G. C. K. Dunsterville as *P. dunstervillei*. The remaining 19 species have been added to the genus *Pleurothallis* since 1975. The subgenus *Ancipitia* was described in 1986 as one of 29 subgenera in *Pleurothallis*.

The species of this subgenus are easily recognized vegetatively by the laterally compressed, two-edged ramicauls, some much more sharply compressed than others, and some compressed only near the leaf. (One species with four-edged ramicauls is segregated into a monotypic section.) The leaves are ovate and sessile, sometimes decurrent on the ramicaul, which suggests some relationship with subgenus *Scopula* which is very similar florally.

The solitary flowers of subgenus *Ancipitia* are produced from the apex of the ramicaul in a fascicle of usually elongated peduncles. The sepals and petals are more or less fleshy, the dorsal sepal free, the laterals completely connate into a synsepal more or less similar to the dorsal sepal. The petals are often thickened.

The lips are most often diversely modified into bizarre shapes resembling insects, or the heads of animals with ears or horns. The semiterete column may

be short or long, stout or slender, sometimes winged or toothed. The anther and rostellum are apical or subapical; the two pollinia are narrowly ovoid with caudicles attached to a well-developed viscidium. The stigma is apical, subapical, or ventral. The column-foot varies from short and thick to essentially absent. In some species a "ball-and-socket" articulation has been developed.

In spite of the extreme variations in the morphology of the lips and columns, this group of species is homogeneous in the morphology of the ramicauls, leaves, peduncles, sepals and petals. Perhaps it can be said that the subgenus is homogeneous in the "heterogeneousness" of the lips and columns. The unusual shapes of many of the lips undoubtedly play individual, independent roles in deceiving and enticing specific pollinators. No investigative work has ever been undertaken.

Other taxa characterized by laterally compressed ramicauls, but more or less triquetrous (three-angled in cross-section), are subgenus *Arthrosia*, distinguished by a racemose inflorescence and a socket-type of articulation of the lip to the column-foot, and section *Sicariae* of subgenus *Acianthera*. The inflorescence of the latter is also racemose.

In common with other pleurothallids, all the species of subgenus *Ancipitia* grow epiphytically in humid, virgin forests. Most are Andean in distribution, one common species (*P. crocodiliceps*) ranging as far north as Chiapas, Mexico. Three species are apparently endemic in Central America. Ten species occur in Ecuador, seven of which are apparently endemic. To date, only one species each is known from Peru and Bolivia. None is known from Brazil. Undoubtedly, additional species still undiscovered will come to our attention in the future. They will be appended to publications of *Icones Pleurothallidinarum*.

Pleurothallis subgenus **Ancipitia** Luer, Icones Pleurothallidinarum III, Monogr. Syst. Bot. Missouri Bot. Gard. 15: 29, 1986.

Type: *Pleurothallis anceps* Luer, Selbyana 5: 159, 1979.

Ety.: From the Latin *anceps*, "two-headed," in reference to the two sharp edges of the laterally compressed ramicaul.

Plants small in size to large, epiphytic, shortly repent to caespitose; roots slender, fasciculate. Ramicauls slender, erect, more or less terete at the base, becoming laterally compressed above to form 2 edges, the greatest depth at the leaf, 4-edged in one species, with a tubular sheath below the middle or above the base and 2 others at the base. **Leaf** erect to more or less spreading, coriaceous, elliptical to ovate, acute, the base cuneate, rounded to cordate, sessile, sometimes decurrent on the ramicaul. **Inflorescence** a fascicle of successive, single-flowered peduncles emerging from the apex of the ramicaul, subtended by a small spathe; **sepals** more or less fleshy, glabrous to pubescent within, the dorsal sepal uppermost, free from the laterals, 3-veined, the lateral sepals completely connate into a synsepal, more or less similar to the dorsal sepal, 4-veined; **petals** broad to narrow, variably thickened, sometimes minutely serrate; **lip** smaller than the sepals and petals, more or less thickened, of various forms, 1-, 2-, 3- or 4-lobed, the base either delicately hinged to near the base of the column, or inflexibly, broadly attached to the base of the column; **column** semiterete, slender to stout, the anther and rostellum apical to subapical, the pollinia 2, ovoid with caudicles, attached to a common viscidium, the stigma entire, apical to subapical, the base of the column united to the apex of the ovary, without forming a foot, or forming a thick, short, pedestal-like or rudimentary foot with a bulbous apex.

Pleurothallis subgen. **Ancipitia** sect. **Ancipitia**

Type: *Pleurothallis anceps* Luer

This section contains all the species of the genus, characterized by laterally compressed (two-edged) ramicauls, except the one species with tetragonal (four-edged) ramicals.

Pleurothallis subgen. **Ancipitia** sect. **Tetragona**

Type: *Pleurothallis tetragona* Luer & Escobar, Orquideología 14: 178, 1981.

Ety.: From the Greek *tetragonos*, "quadrangular," referring to the four-edged ramicaul.

Ramicaulis tetragonus.

This monotypic section is characterized by the compressed ramicaul, four-angled in cross-section.

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Pleurothallis caprina Luer & Escobar . . . . . Plate 4.
Pleurothallis condorensis Luer & Hirtz . . . . . Plate 5.
Pleurothallis crocodiliceps Rchb. f. . . . . Plate 6.
Pleurothallis dunstervillei Foldats . . . . . Plate 7.
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KEY TO THE SECTIONS AND SPECIES OF *PLEUROTHALLIS* SUBGENUS *ANCIPITIA*

Section *Tetragona*

1 Ramicauls tetragonal (four-sided in cross-section) ..... *P. tetragona*

Section *Ancipitia*

1' Ramicauls ancipitous (two-sided in cross-section) 2

2 Flowers produced successively 3
2' Flowers produced simultaneously ..... *P. dunstervillei*

3 Lip more or less ovate, entire 4
3' Lip 2-, 3-, or 4-lobed 10

4 Sepals suborbicular, ca. 2 mm long and wide, concave, white ..... *P. niveoglobula*
4' Sepals more or less ovate, acute to narrowly obtuse 5

5 Lip suborbicular with thickened margins ..... *P. viduata*
5' Lip ovate 6

6 Apex of lip uncinate, inflexed ..... *P. harpago*
6' Apex of lip acute to subacute 7

7 Petals membranous, linear, entire ..... *P. inornata*
7' Petals thick, narrow, cellular-glandular to serrulate 8

8 Ramicauls 4-6 mm deep; sepals more than 10 mm long ..... *P. anceps*
8' Ramicauls 2-3 mm deep; sepals less than 8 mm long 9

9 Sepals 6-8 mm long; lip with a low callus above the middle ..... *P. eumecocaulon*
9' Sepals 4-5 mm long; lip without a callus above the middle ..... *P. instar*

10 Lip bilobed at the apex 11
10' Lip with lateral or basal lobes and entire middle lobe 12

11 Lip without lateral lobes ..... *P. furcifera*
11' Lip 4-lobed, 2 apical and 2 lateral lobes ..... *P. solium*

12 Lip with slender or infolded, lateral or basal lobes (the animal heads) 13
12' Lip with broad or oblong lateral or basal lobes, not infolded (the insects) 18

13 Lateral or basal lobes of the lip narrowly acute 14
13' Lateral or basal lobes of the lip subacute to obtuse 17

14 Sepals narrowed above the middle; petals subulate 15
14' Sepals ovate, obtuse; petals not subulate 16

15 Petals falcate; lip acute with infolded sides . . . . . *P. gratiosa*
15' Petals not falcate; lip truncate-retuse, without infolded sides . . . . . *P. odobeniceps*

16 Petals broad; lobes of the lip capillary, erect . . . . . *P. caprina*
16' Petals narrow; lobes of the lip narrowly acute, infolded . . . . . *P. crocodiliceps*

17 Basal lobes of the lip small, erect . . . . . *P. caniceps*
17' Basal lobes of the lip infolded, as large as the middle lobe . . . . . *P. onagriceps*

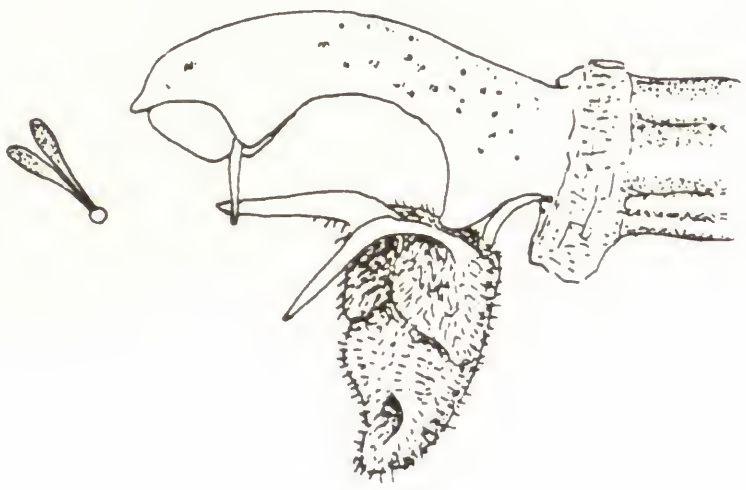
18 Lip suborbicular with short, acute, lateral lobes . . . . . *P. vorator*
18' Lip not suborbicular 19

19 Lip truncate, lateral lobes erect, narrowly obtuse 20
19' Lip obtuse, lateral lobes oblique, subfalcate 21

20 Lateral lobes above the middle, with a pair of external lobules . . . . . *P. membracidoides*
20' Lateral lobes below the middle, without external lobules . . . . . *P. condorensis*

21 Lateral lobes broadly falcate, larger than the middle lobe . . . . . *P. praecipua*
21' Lateral lobes oblique. erose, smaller than the middle lobe 22

22 Lip 3 mm long, deeply concave below the middle; column longitudinally winged . . . . . *P. anthrax*
22' Lip 5 mm long, not deeply concave below the middle; column narrowly winged at the apex . . . . . *P. duplex*

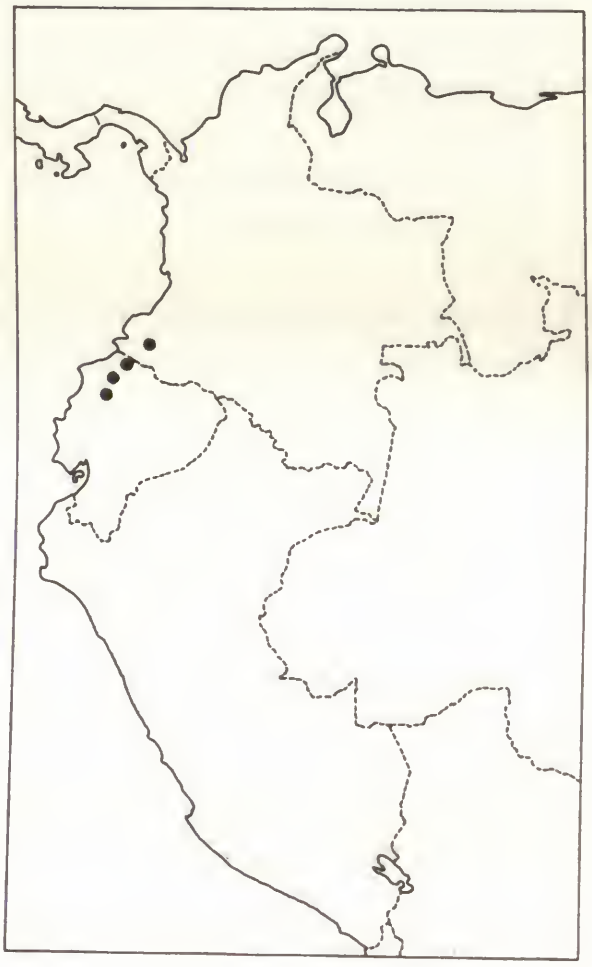


Pleurothallis anceps Luer, Selbyana 5: 159, 1979.

Ety.: From the Latin *anceps*, "two-sided," referring to the laterally compressed ramicaul.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls stout, erect, sharply ancipitous above the base, 6-21 cm long, up to 6 mm deep at the leaf, with a tubular sheath above the base and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, ovate, acute, carinate externally, with more or less revolute margins, 5-11 cm long, 1.5-2.5 cm wide, the base rounded, shallowly cordate, sessile, with the sides more or less shortly decurrent on the ramicaul. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5-10 mm long at the base of the leaf; peduncle filiform, erect, 5-10 mm long; floral bract 5-10 mm long; pedicel 15-20 mm long; ovary subverrucose, 4 mm long; **sepals** greenish white, dotted purple, subcarinate, the dorsal sepal narrowly ovate-triangular, linear above lower quarter, acute, 10-13 mm long, 3-3.5 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 10-13 mm long, 3.5-4 mm wide; **petals** white, dotted with purple, fleshy, narrowly linear-triangular, 10-12 mm long, 1.5 mm wide, semiterete above the middle with minutely serrate margins; **lip** white, suffused and dotted with red, ovate, subacute, 4.5 mm long, 2 mm wide, the disc with a low, smooth, rounded callus in the center, the base, truncate, broadly fixed to the column-foot; **column** pink, stout, semiterete, 1 mm long, the anther and stigma subapical, the foot short, thick, with the apex of the ovary.

ECUADOR: Prov. of Carchi: epiphytic in forest above Maldonado, alt. 1500 m, flowered in cultivation 30 Sept. 1978 *M. Madison et al., s.n.* (Holotype: SEL); wet forest east of Maldonado, alt. 1800 m, 17 Feb. 1989, *S. Dalström & T. Höijer 1248* (MO). Prov. of Imbabura: epiphytic in seasonally wet forest above Guadal on Río Blanco, alt. 1450 m, 20 Jan. 1987, *C. Luer, J. Luer, A. Hirtz & D. Bermudes 12449* (MO). Prov. of Pichincha: terrestrial on the road embankment between Nanegalito and Gualea, alt. 1500 m, 9 Aug. 1978, *C. H. Dodson, T. Dodson, A. Embree & R. Perry 6993* (SEL). COLOMBIA: without locality, flowered in cultivation by M. & O, Robledo at La Ceja, R. Escobar 1416, 16 Oct. 1977, *C. Luer 2056* (SEL).



This species is apparently endemic in southern Colombia and northern Ecuador where it is occasionally encountered. The deep, sharply laterally compressed ramicaul bears an erect, rigid leaf with a carinate midrib and with revolute margins. The dorsal sepal and synsepal are narrowly ovate and similar; the narrow, pointed petals are serrulate; and the lip is ovate and simple.

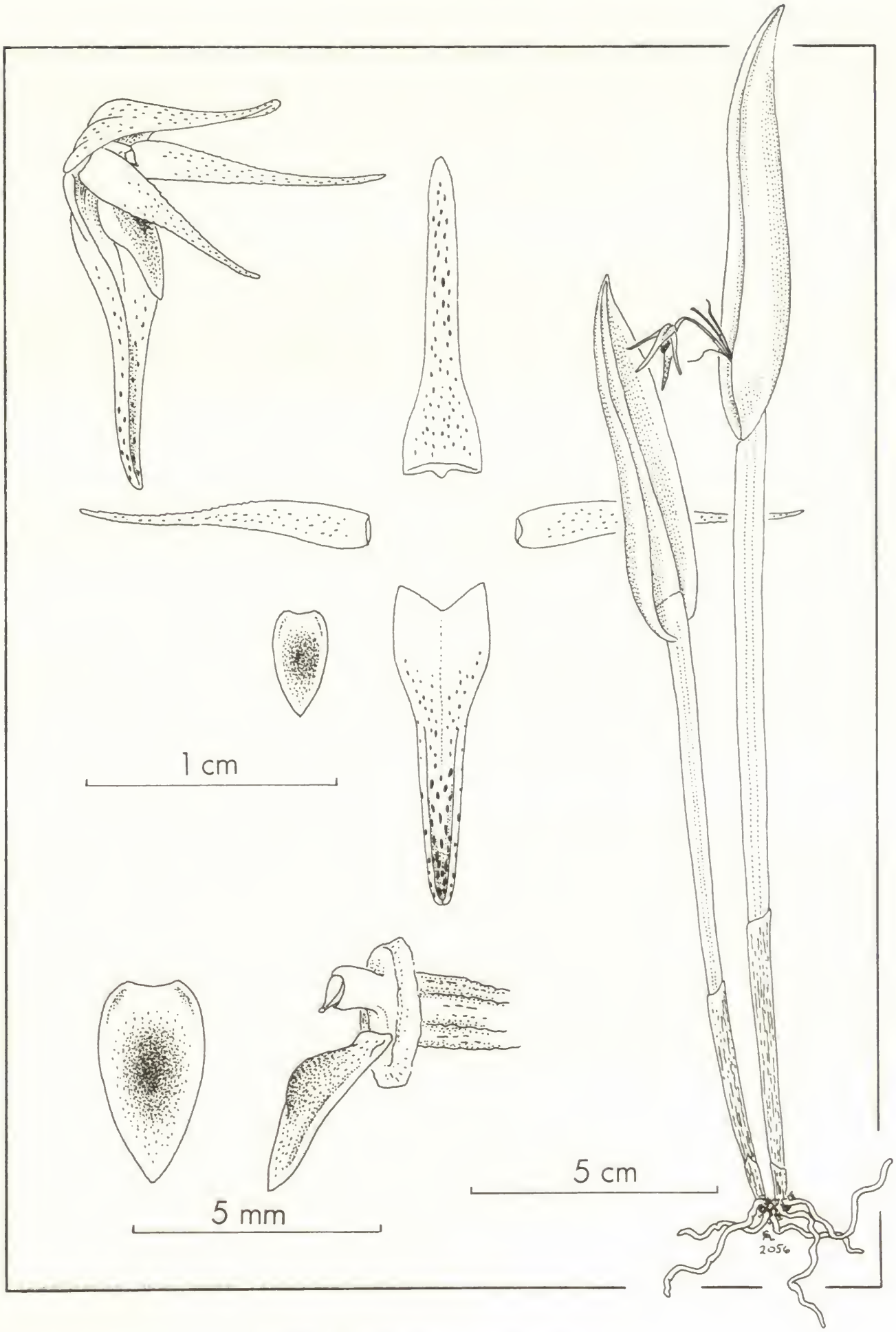


Plate 1. *Pleurothallis anceps* Luer

Pleurothallis anthrax Luer & Escobar, Orquideología 14: 130, 1981.

Ety.: From the Greek *anthrax*, "charcoal," in allusion to the anterior lobe of the lip.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous above the middle, 5-11 cm long, up to 3 mm deep at the leaf, with a tubular sheath below the middle and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, ovate, acute, 2.5-5 cm long, 1-2 cm wide, the base rounded, shallowly cordate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5 mm long at the base of the leaf; peduncle filiform, suberect to erect, 2.5-3 cm long; floral bract 4-6 mm long; pedicel 10-20 mm long; ovary 3 mm long; **sepals** white, suffused, dotted or mottled with purple below the middle, the dorsal sepal narrowly ovate, acute, concave, 10-11 mm long, 3-4 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 10-11 mm long, 3-4 mm wide expanded; **petals** white, spotted with purple below the middle, fleshy, narrowly linear-triangular, 10 mm long, 1 mm wide, thickened above the middle with minutely serrate margins; **lip** white, spotted with deep purple, obovate-trilobed, 2.5-3 mm long, 1.5-2.5 mm wide expanded, the apical lobe purple-black, ovate, obtuse to abruptly acute, convex, cellular-papillose, the lateral lobes near the middle, ovate, oblique, more or less serrulate, the base concave, truncate, articulated with the bulbous apex of the column-foot; **column** white, spotted with purple, semiterete, 2 mm long, the margins serrulate, the anther and stigma subapical, the foot bulbous at the apex.

COLOMBIA: Intend. of Putumayo: epiphytic in cloud forest between San Francisco and Mocoa, alt. 2200 m, 20 Jan. 1979, *C. Luer, J. Luer, R. Escobar & O. Ospina et al. 3724* (Holotype: SEL); same area, alt. 2100 m, 27 Jan. 1987, *C. Luer, J. Luer, R. Escobar & O. Ospina 12544* (MO); Valle del Sibundoy, alt. 2300-2600 m, 15 Aug. 1977, collected by J. M. Serna, cultivated by M. & O. Robledo at La Ceja, *R. Escobar 1831* (JAUM), flowered 26 Jan. 1978, *C. Luer 2333* (SEL).

This species is apparently endemic on the eastern slopes of the Andes of southernmost Colombia where it is not uncommon. Vegetatively it is similar to other species of the subgenus, but *P. anthrax* is distinguished by pointed, serrulate petals and a small lip with a coal black middle lobe. The lateral lobes may or may not be serrated.

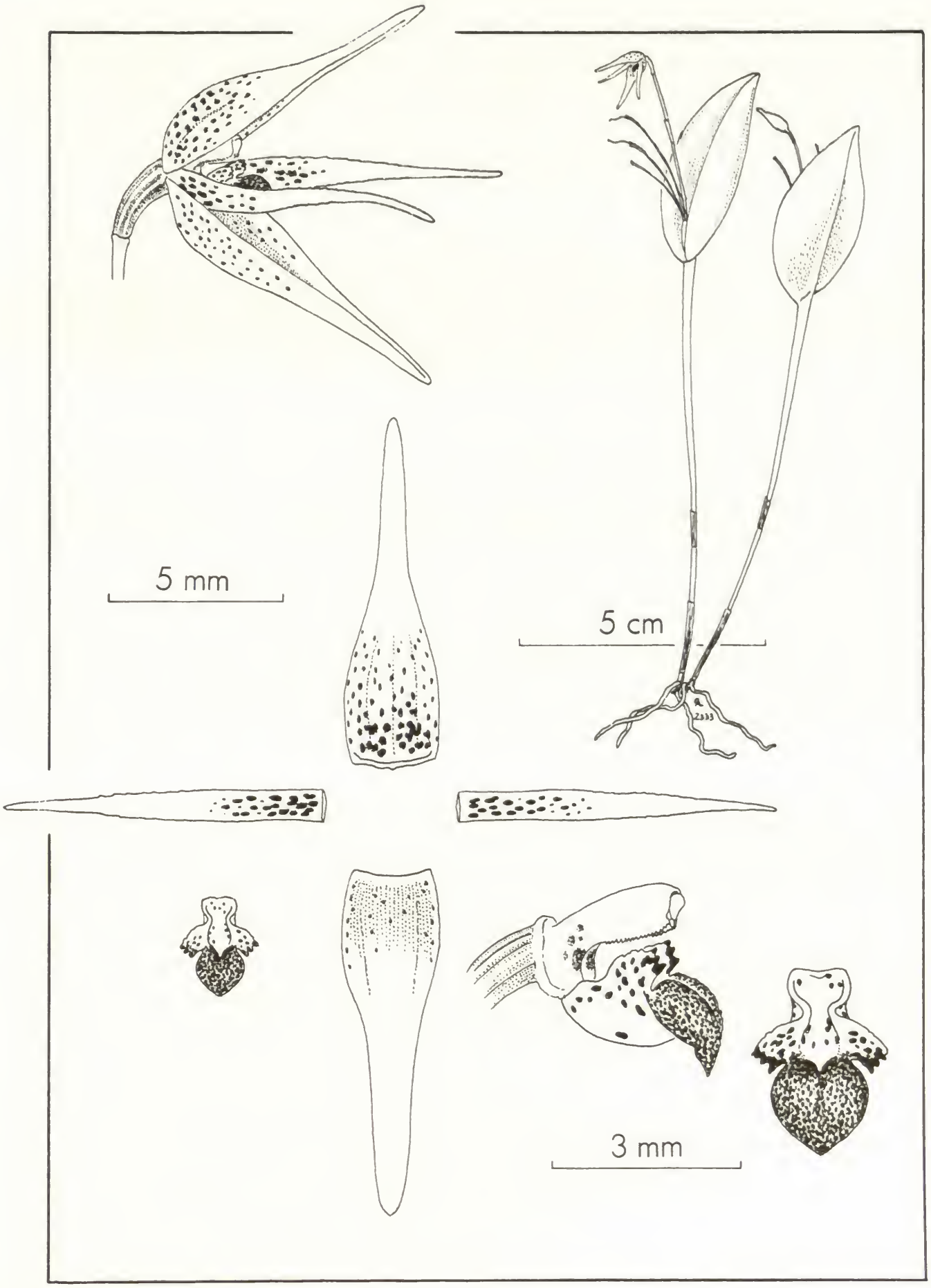


Plate 2. *Pleurothallis anthrax* Luer & Escobar

Pleurothallis caniceps Luer, Selbyana 7: 114, 1982.

Ety.: From the Latin *caniceps*, "dog-headed," referring to the appearance of the lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous above the middle, 2.5-5.5 cm long, 2 mm deep at the leaf, with 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, elliptical, acute, 4-6.5 cm long, 1.3-2 cm wide, the base cuneate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 4 mm long at the base of the leaf; peduncle filiform, suberect, 20-23 mm long; floral bract 5-6 mm long; pedicel 20-23 mm long; ovary subcarinate, 4 mm long; **sepals** rosy white with light rose spots, subcarinate, the dorsal sepal narrowly ovate, acute, concave, 10 mm long, 3.5 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, obtuse, 9.5 mm long, 4.5 mm wide expanded; **petals** white, fleshy, terete, cellular-glandular, narrowly linear-falcate, acute, 8.5 mm long, 1.25 mm wide; **lip** rose, heavily suffused and dotted with red-purple, fleshy, shortly pubescent, 3-lobed, 2.25 mm long, 1.5 mm wide, the middle lobe thickened, ovate, obtuse, lightly cleft medially, the basal lobes small, erect, triangular, subacute, the base truncate, thinly hinged to the base of the column; **column** white, suffused with purple, semiterete, 2 mm long, the anther apical, exposed, the foot pubescent, thick, with the apex of the ovary.

COSTA RICA: Prov. of Alajuela: epiphytic in felled trees below the entrance to the Monteverde Preserve, alt. 1400 m, 24 June 1981, *C. Luer & A. Luer 6811* (Holotype: SEL)

This species is apparently endemic in Costa Rica where only one plant was found on freshly cut trees along the road before the entrance to the Monteverde Preserve. *Pleurothallis caniceps* is distinguished by the elliptical, cuneate leaves, gaping flowers and a minute lip reminiscent of that of *P. crocodiliceps*. Instead of the basal lobes being inflexed and narrowly acute, the lobes of *P. caniceps* are triangular and erect, suggesting the ears of a dog.

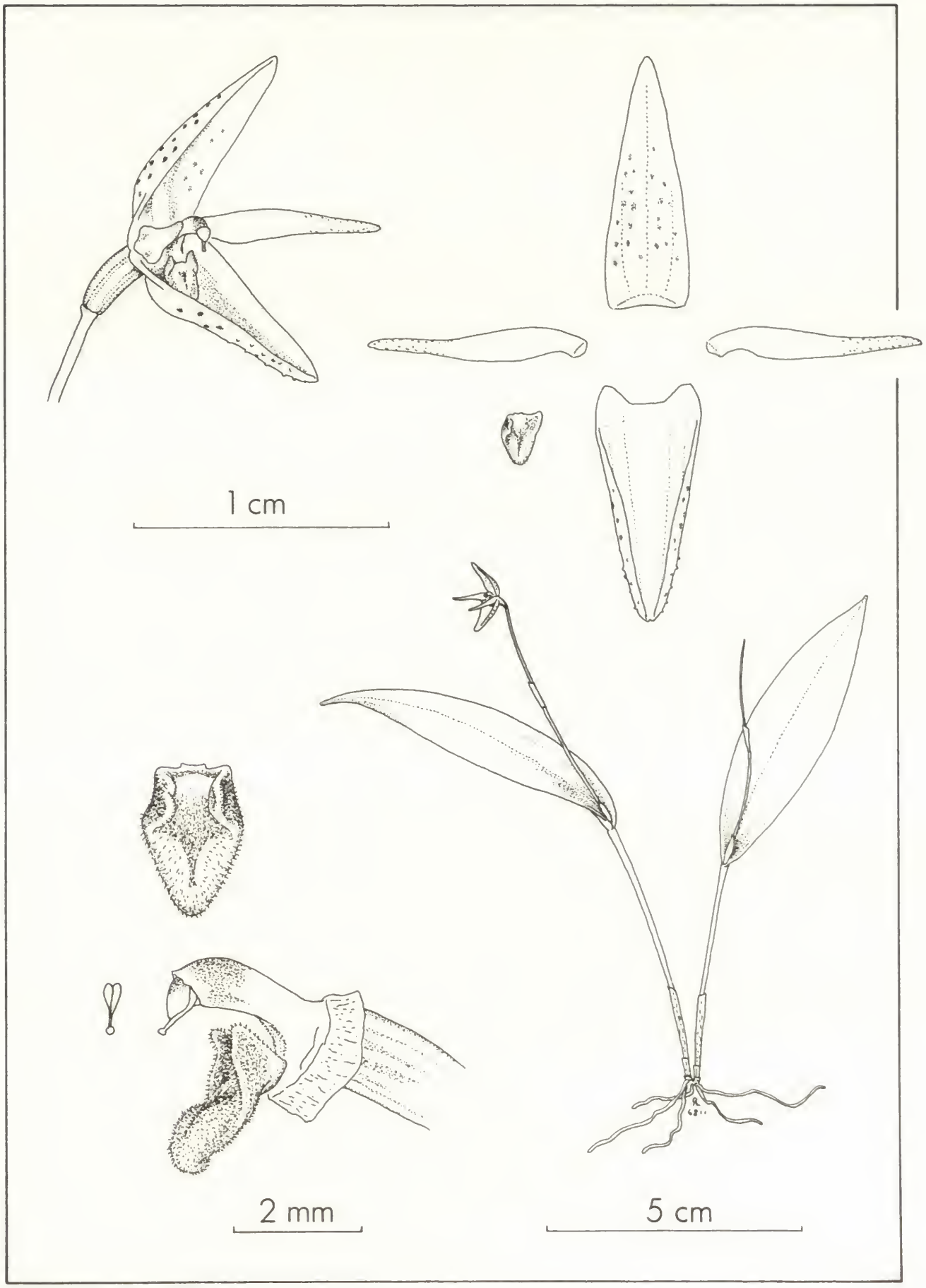


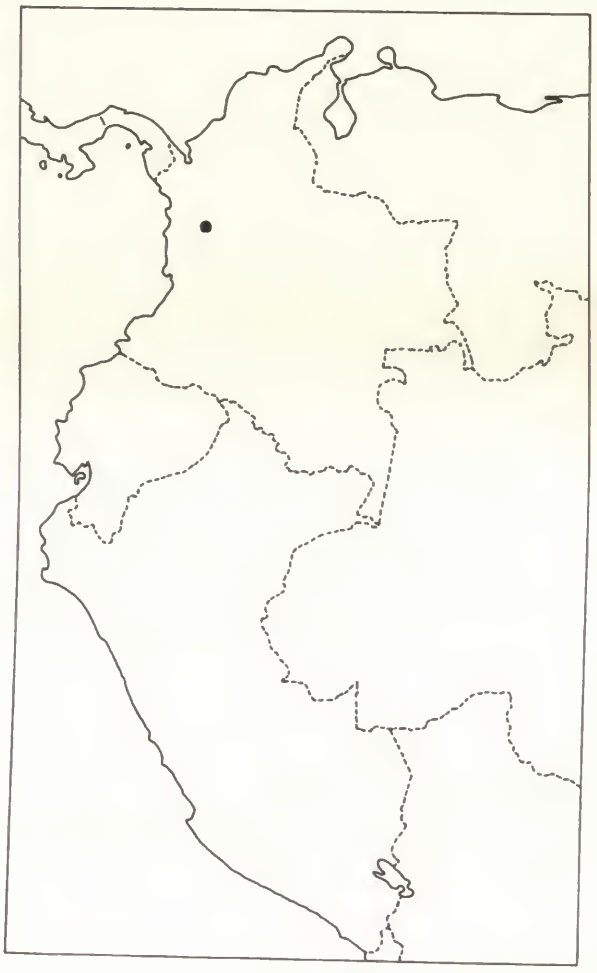
Plate 3. *Pleurothallis caniceps* Luer

Pleurothallis caprina Luer & Escobar, Orquideología 14: 138, 1981.

Ety.: From the Latin *caprinus*, "like a goat," referring to the appearance of the lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous, 8-17 cm long, up to 5 mm deep at the leaf, with 2-3 sheaths at the base. **Leaf** coriaceous, erect, ovate, acute, 5-8 cm long, 2.5-4.5 cm wide, the base rounded, cordate, sessile, the basal lobes inflexed. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5-8 mm long at the base of the leaf; peduncle filiform, ascending to erect, 3-5.5 cm long; floral bract tubular, 10-15 mm long; pedicel 3-5 cm long; ovary 6 mm long; **sepals** fleshy, the dorsal sepal light orange, spotted with red-purple, broadly ovate, concave, subacute, 12 mm long, 7 mm wide unspread, the lateral sepals white, flecked with red-purple, completely connate into an elliptical, subacute, concave synsepal, 13 mm long, 7 mm wide unexpanded; **petals** fleshy, pink, marked with red-purple, broadly ovate, oblique, obtuse, 7 mm long, 5 mm wide, obtusely angled on the lower margin; **lip** white, dotted with purple, fleshy, subovoid-trilobed, deflexed near the middle, with a shallow cavity, the apex rounded, apiculate, 1.5 mm long, with narrowly falcate basal lobes, 2 mm wide across the lobes expanded, the base subtruncate, delicately hinged to the base of the column; **column** white, dotted with red, stout, semiterete, 3.5 mm long, the anther subapical, the stigma ventral, the base of the column pubescent, thickened with the apex of the ovary.

COLOMBIA: Dept. of Antioquia: Munic. of Urrao, Río Pabón, alt. 2000-2200 m, collected by J. M. Serna, cultivated in Medellín by A. Mejía, *R. Escobar 226* (Holotype: JAUM); flowered in cultivation by M. & O. Robledo at La Ceja, 19 Oct. 1977, *C. Luer 2093* (SEL); 19 Mar. 1989, *C. Luer 14272* (MO).



This unusual species is known by a single collection from the Western Cordillera of Colombia. It is distinguished by the spotted, concave dorsal sepal and synsepal, broad petals, and a glabrous lip with lateral lobes reminiscent of that of *P. crocodiliceps*. Instead of being inflexed, the aristate lobes are erect like a pair of horns. The latter can be appreciated only with a strong magnifying glass.

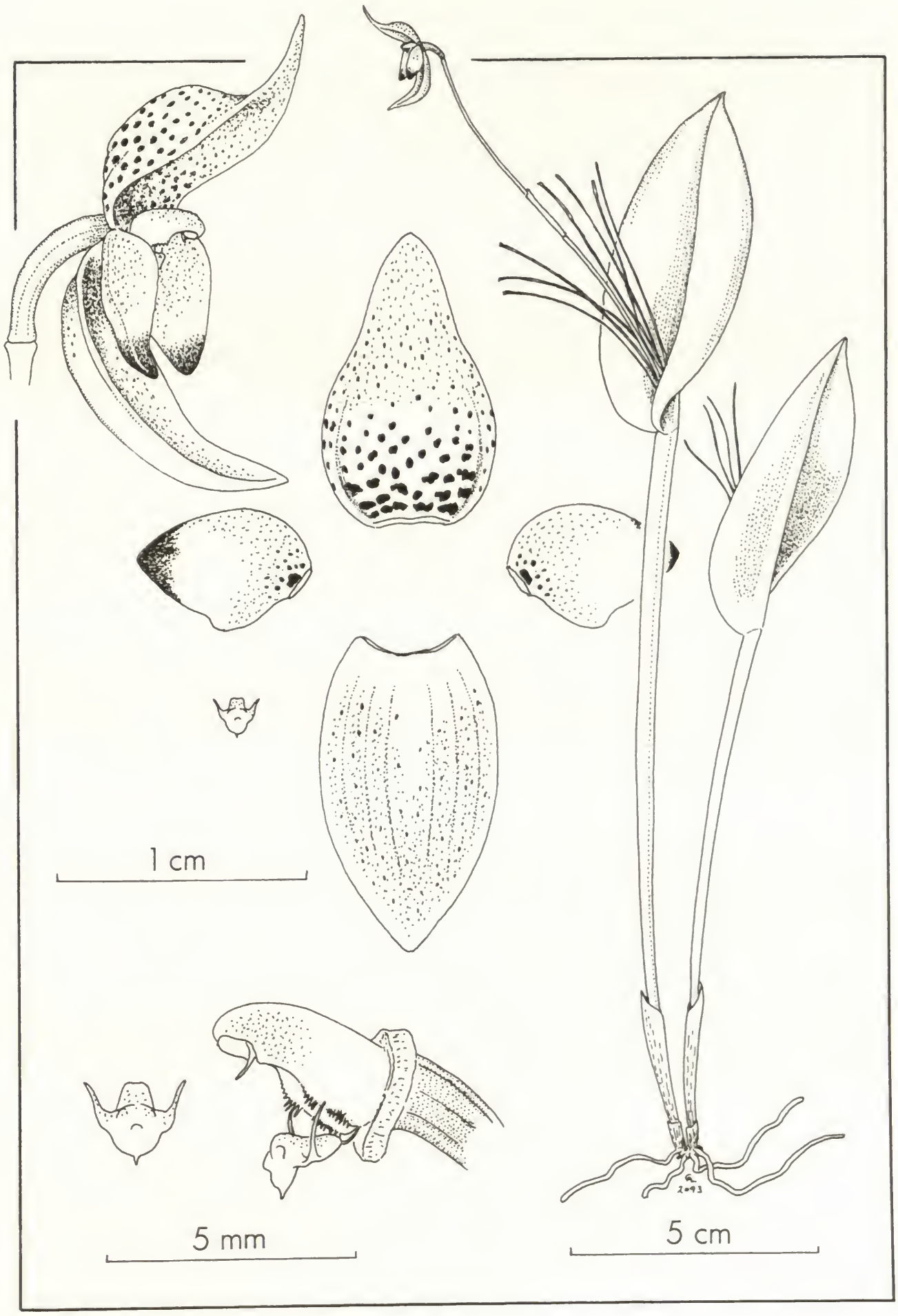


Plate 4. *Pleurothallis caprina* Luer & Escobar

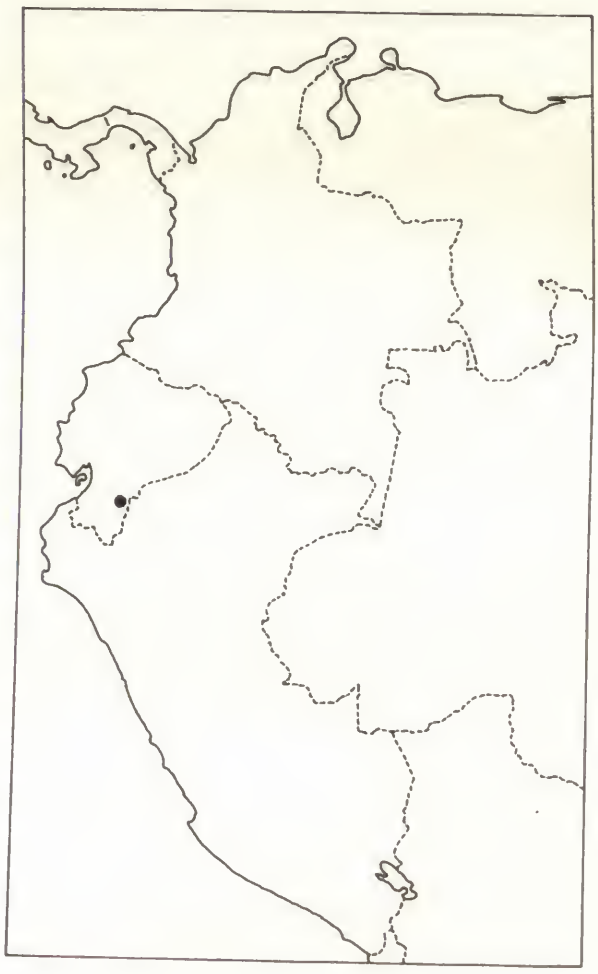
Pleurothallis condorensis Luer & Hirtz, sp. nov.

Ety.: Named for the Cordillera del Condor where the species was discovered.

Inter species subgeneris *Ancipitiae* Luer species haec labello trilobato, lobo antico crasso dilatato truncato, lobis lateralibus erectis oblongis obtusis et disco carinato differt.

Plant medium in size, epiphytic, shortly repent or loosely caespitose; roots slender. Ramicauls slender, erect to suberect, sharply ancipitous above the middle, 5-15 cm long, with a bract below the middle and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, more or less spreading, ovate, acute, 3.5-5.5 cm long, 1.5-2 cm wide, the base narrowly cordate to obtuse, decurrent on the ramicaul for 3-7 mm. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 7-8 mm long at the base of the leaf; peduncle filiform, reclining, 10-15 mm long; floral bract 6 mm long; pedicel ascending, 25-35 mm long; ovary pitted, 4 mm long; **sepals** and petals white, spotted and suffused with purple-brown below the middle, the dorsal sepal ovate, narrowly obtuse, concave below the middle, 12.5 mm long, 4.5 mm wide unexpanded, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 11.5 mm long, 4.5 mm wide unexpanded; **petals** narrowly linear, acute, 10 mm long, 1 mm wide, thickened with the margins lightly erose above the middle; **lip** yellow-white, dotted and suffused with purple below the middle, 3-lobed, 2.5 mm long, the middle lobe thickened, flabellate, truncate, the lateral lobes erect, oblong, obtuse, 1.25 mm long, 3.5 mm wide across the lobes expanded, the disc with a longitudinal carina between the lobes, the base thickened and rounded, hinged to the column-foot beneath the swollen apex; **column** white, dotted and suffused with purple, semiterete, 2 mm long, the anther subapical, exposed, the foot thick, 1.5 mm long with the apex of the ovary.

ECUADOR: Prov. of Morona-Santiago: epiphytic in cloud forest, Cordillera del Condor, east of Los Encuentros, alt. 1450 m, 4 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12614* (Holotype: MO).



This species was first discovered on the trunk of a fallen tree beside a new road into the Cordillera del Condor by Alexander Hirtz. Only one large plant in full flower was found, although numerous other orchids were present. Other plants of this species were found on subsequent trips into the Condor. A flower is pictured on the cover of *Das Geheimnis der Orchideen*, Hamburg, 1988.

The lip is three-lobed with the middle lobe broadly truncate and the lateral lobes oblong and erect. Its closest relative is *P. solium*, also found in Morona-Santiago, but the latter is distinguished by the rounded sepals, spathulate petals and short, triangular, lateral lobes of the lip.

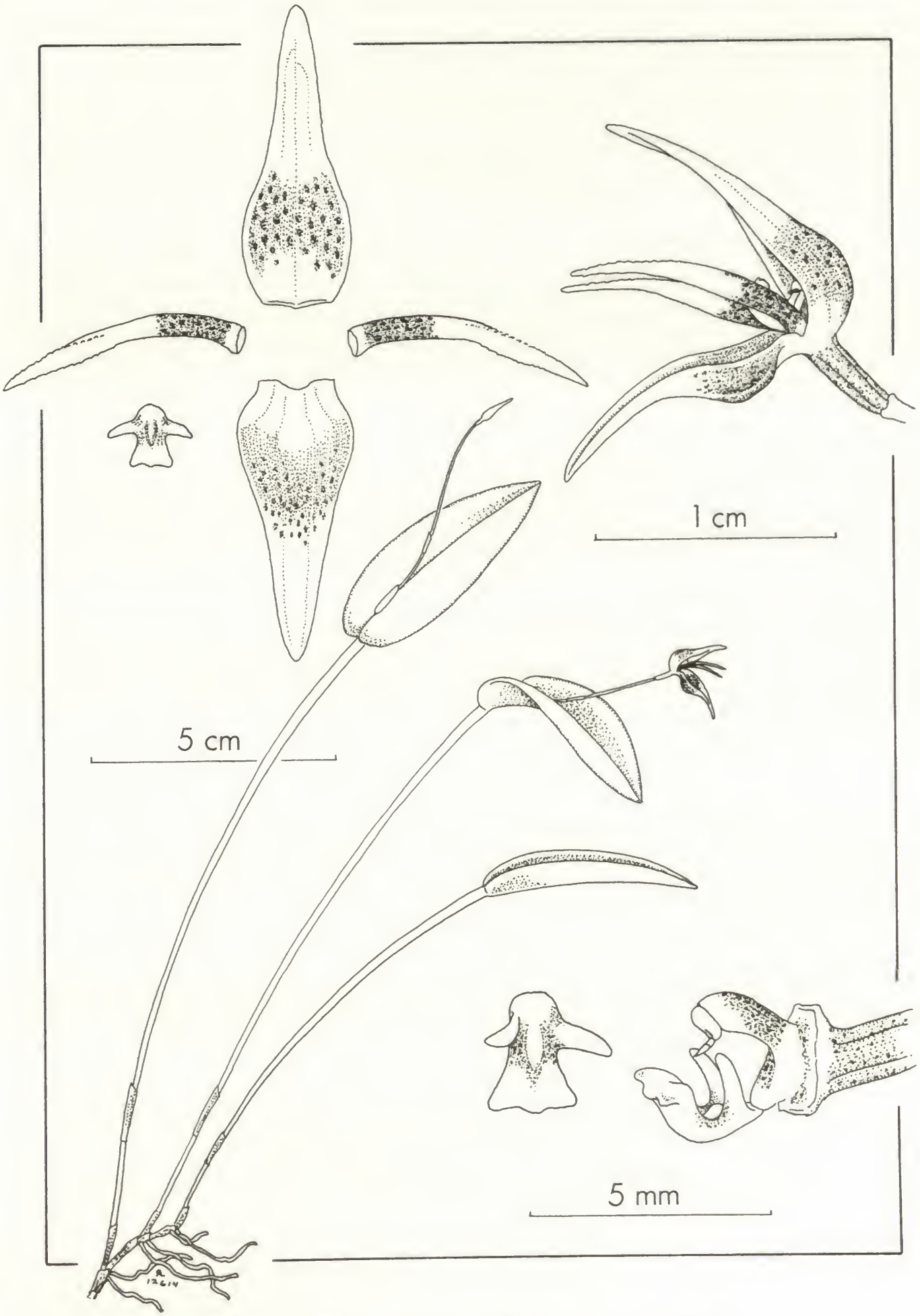


Plate 5. *Pleurothallis condorensis* Luer & Hirtz

Pleurothallis crocodiliceps Rchb. f., Bonplandia 3: 72, 1855.

Ety.: From the Latin *crocodiliceps*, "crocodile-headed," referring to the flower.

Syn.: *Pleurothallis arietina* Ames, Sched. Orch. 4: 16, 1923.

Ety.: From the Latin *arietinus*, "like a ram," referring to the appearance of the lip.

Syn.: *Pleurothallis nelsonii* Ames, Sched. Orch. 4: 22, 1923.

Ety.: Named in honor of E. W. Nelson, who collected the plant.

Plant medium to large in size, epiphytic, shortly repent or loosely caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous above the middle, 10-25 cm long, up to 6 mm deep at the leaf, with a bract below the middle and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, more or less spreading, ovate, acute, 6-12 cm long, 3-5.5 cm wide, the base rounded, cordate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 1-1.5 cm long at the base of the leaf; peduncle filiform, reclining, ascending to suberect, 1-3.5 cm long; floral bract tubular, 6-8 mm long; pedicel 1.5-3 cm long; ovary 4-5 mm long; **sepals** fleshy, white to yellowish, with or without purple spots, the dorsal sepal oblong, obtuse, concave, 9-14 mm long, 3.5-4.5 mm wide, the lateral sepals completely connate into an oblong, obtuse, concave synsepal, 8-13 mm long, 4-5 mm wide unexpanded; **petals** fleshy, narrowly subfalcate, acute to narrowly obtuse, 8-13 mm long, 1-2 mm wide, semiterete to triquetrous and carinate above the subunguiculate base; **lip** dark purple with the apex and lobes rose, 3-lobed, 1.5-2 mm long, 1.5-2 mm wide unexpanded, pubescent, the middle lobe subovoid, thickened, with a cavity above the obtuse apex, the lateral lobes membranous, narrowly falcate-triangular, folded over the middle lobe in the natural position, 4.5 mm wide across the lobes expanded, the base subtruncate, delicately hinged behind a conical callus above the base of the column; **column** white, dotted and suffused with purple, semiterete, 2.5-4 mm long, the anther subapical, exposed, the base of the column thick with the apex of the ovary.

COLOMBIA: Old prov. of Ocaña (Dept. of Santander del Norte): Agua de la Virgen, *H. Wagener s.n.* (Holotype: W).
VENEZUELA: Dist. Fed.: between El Junquito and Colonia Tovar, alt. 2200 m, *Blaumann s.n.*.
MEXICO: State of Chiapas: Chicharras, alt. 3000-6000 ft., 6 Feb. 1896, *E. W. Nelson 3763* (AMES, type of *P. nelsonii*); Mt. Boquerón above Huixtla, alt. 1300-1800 m, 2 Mar. 1936, *O. Nagel 4302* (MO).
COSTA RICA: Prov. of Cartago: La Estrella, *C. H. Lankester & A. Sancho s.n.* (AMES, type of *P. arietina*); east of Cachi, 5 Feb. 1979, *T. Croat 47076* (MO). Prov. of Guanacaste: Rincon de la Vieja, Volcán Santa Maria, alt. 900-1200 m, 27 Jan. 1983, *G. Davidse et al. 23419* (MO).
PANAMA: Prov. of Chiriquí: above Boquete, 20 Mar. 1977, *J. P. Folsom 2187* (MO). Prov. of Coclé: mountains beyond La Pintada, alt. 400-600 m, 17 Feb. 1935, *A. A. Hunter & P. H. Allen 595* (MO); El Valle, 6 Mar. 1975, *C. Luer & H. Butcher 751* (SEL). Prov. of Veraguas: Sept. 1976, *C. Luer & R. Dressler 1136* (SEL).
ECUADOR: Prov. of Tungurahua: epiphytic on slopes of Volcán Tungurahua, alt. 2400 m, Oct. 1983, *A. Hirtz 1324* (MO). Prov. of Zamora-Chinchipe: Loja-Zamora road, collected July 1975, flowered in cultivation, 1976, *C. Luer 1280* (SEL); wet forest near Sabanilla, alt. 1600 m, 26 Jan. 1989, *S. Dalström & T. Höijer 1203* (MO).Cordillera del Condor, east of Los Encuentros, alt. 1500 m, 21 Jan. 1989, *C. Luer, J. Luer, P. Jesup & A. Jesup 14032* (MO).

This species, first encountered in the Eastern Cordillera of Colombia, is relatively frequent and variable in its wide distribution from southern Mexico through Central America into Venezuela and through the Andes to southern Ecuador. The sepals vary from snow white to yellow with purplish spots. The narrow, fleshy petals vary from semiterete to more or less triquetrous with a dorsal carina.

The lip, however, seems morphologically stable. It is so small that it can be easily overlooked, leading to the impression that the lip is missing. Microscopically it is a fascinating, hairy, two-winged organ that undoubtedly acts as some kind of a bait for a pollinator.

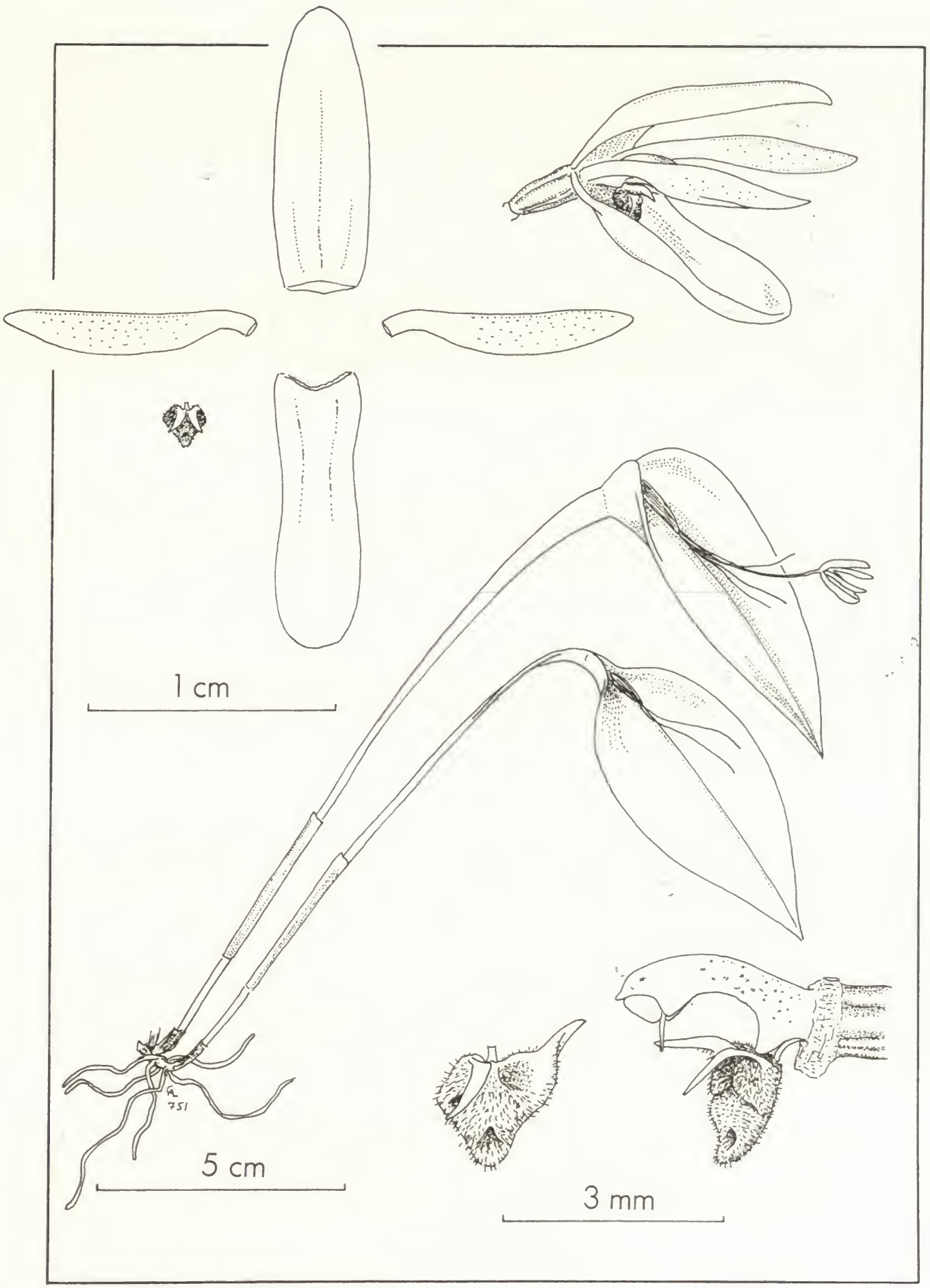
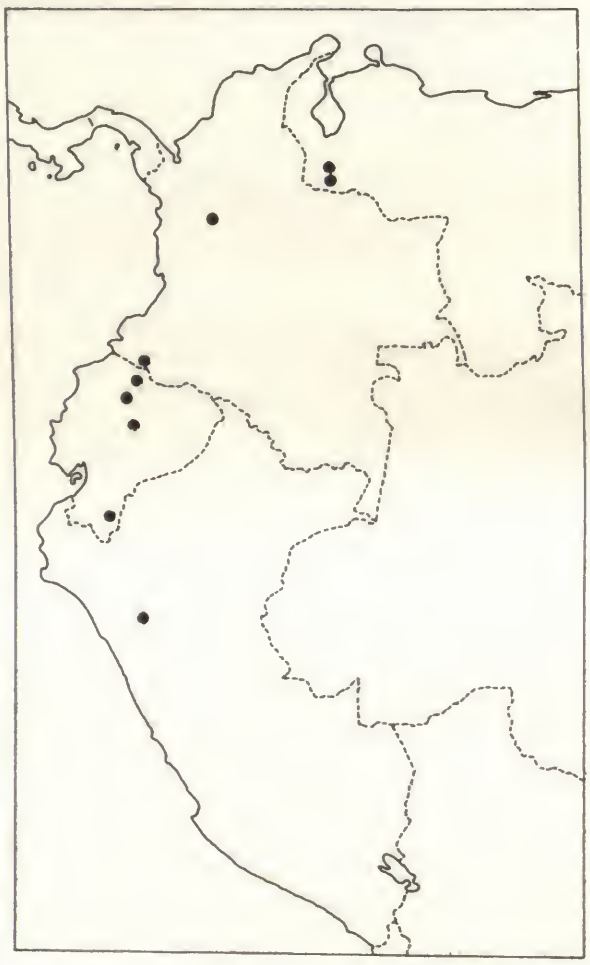


Plate 6. *Pleurothallis crocodiliceps* Rchb. f.

Pleurothallis dunstervillei Foldats, Acta Bot. Venez. 3: 371, 1968.

Ety.: Named in honor of G. C. K. Dunsterville, distinguished author and illustrator of Venezuelan orchids.

Plant large, epiphytic, shortly repent or loosely caespitose; roots coarse. Ramicauls stout, erect, terete below the middle, more or less laterally compressed above the middle, 20-65 cm long, up to 4 mm deep at the leaf, with a tubular sheath above the middle and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect to spreading, ovate, acute, carinate externally, 8-16 cm long, 5-10 cm wide, the base cordate, sessile. **Inflorescence** a fascicle a few to many solitary, simultaneous flowers borne from a reclining spathe 10 mm long at the base of the leaf; peduncle filiform, erect, 1-2 cm long; floral bract 9-10 mm long; pedicel 1.5-3.5 cm long; ovary 4 mm long; **sepals** yellow to yellow-orange, dotted with red below the middle, fleshy, the dorsal sepal narrowly ovate-triangular, linear and thickened above the concave lower quarter, acute, 10-14 mm long, 3 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 10-14 mm long, 4.5 mm wide; **petals** yellow, fleshy, cellular-glandular to cellular pubescent, ovate in the basal fourth, narrowly linear above, terete, acute, 10-14 mm long, 2.25-0.75 mm wide; **lip** white, ovate, acute, 2.5-5 mm long, 1.75-2 mm wide, the margins erose, minutely pubescent, the disc filled below the middle with a dark purple, low, rounded, pubescent callus, the base, truncate, with a minute, pubescent auricle at either corner, broadly attached to the column-foot; **column** pink, stout, semiterete, 1 mm long, the anther and stigma subapical, the foot short, thick, with the apex of the ovary.



VENEZUELA: State of Táchira: south of San Vicente de Revancha, alt. 2500-2700 m, *J. A. Steyermark, G. C. K. & E. Dunsterville 100843* (Holotype: VEN); cloud forest below Paramo de Tamá, alt. 2475-2550 m, July 1967, *J. A. Steyermark, G. C. K. & E. Dunsterville 98482* (VEN); Quebrada Agua Azul, 22 July 1979, *J. Steyermark & R. Liesner 118301* (MO); Cerro San Isidro, alt. 2300-2650 m, 13 Nov. 1982, *G. Davidse & A. Gonzales 22186* (MO).
COLOMBIA: Prov. of Nariño: east of Ypiales near La Victoria, alt. ca. 3000 m, 22 Feb. 1978, *C. Luer, J. Luer & A. Hirtz 2744* (SEL).
ECUADOR: Prov. of Napo: epiphytic in forest south of Santa Barbara, alt. 2700 m, 6 Apr. 1985, *C. Luer, J. Luer & A. Hirtz 11104* (MO); north of Archidona, alt. 2330 m, 7 Oct. 1980, *T. Croat 50502* (MO). Prov. of Pichincha: "forest on the eastern slope of the Andes at 9000 ft.," ca. 1853, *Jameson s.n.* (K). Prov. of Zamora-Chinchipe: cloud forest above Valladolid, alt. 2700 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10912* (MO).
PERU: Dept. of Cajamarca: Prov. of Cutervo, alt. 2600 m, 10 Aug. 1987, *C. Diaz & H. Osores 2609* (MO).

This robust species, the largest of the subgenus, is widely distributed and relatively frequent in Andean forests from western Venezuela through Colombia into northern Peru. It varies from the usual pattern seen in the subgenus by the ramicaul that is laterally compressed only near the apex, and the simultaneous appearance of the flowers.

A specimen of this species collected in Ecuador by Jameson, and a specimen of a different species collected in Colombia by Hartweg, are mounted side by side and labeled *P. coriacardia* in Lindley's herbarium at K (Kew). A drawing of the floral parts of Jameson's collection is pasted at the bottom. Lindley considered the two to be the same species in his *Folia Orchidaceae* (1859). Reichenbach also believed the two to be the same when he described them as *P. coriacardia* in 1854. In his herbarium now at W (Vienna) he has a tracing of the plant of Jameson's collection, but a copy of the floral parts of Hartweg's collection, and he cited Hartweg's collection in his description. Hartweg's collection, excluding Lindley's collection, is hereby designated as the lectotype of *Pleurothallis coriacardia*.

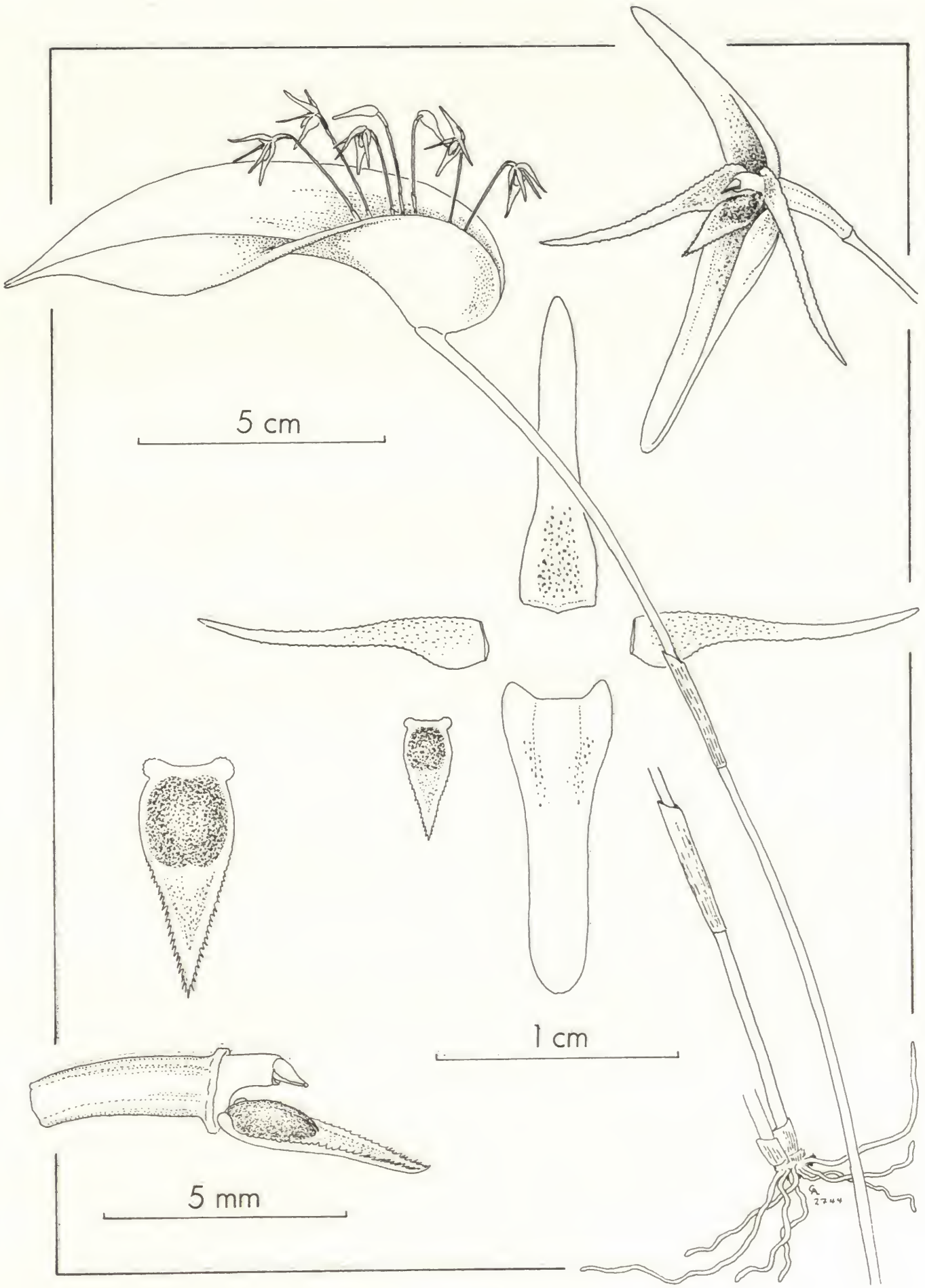


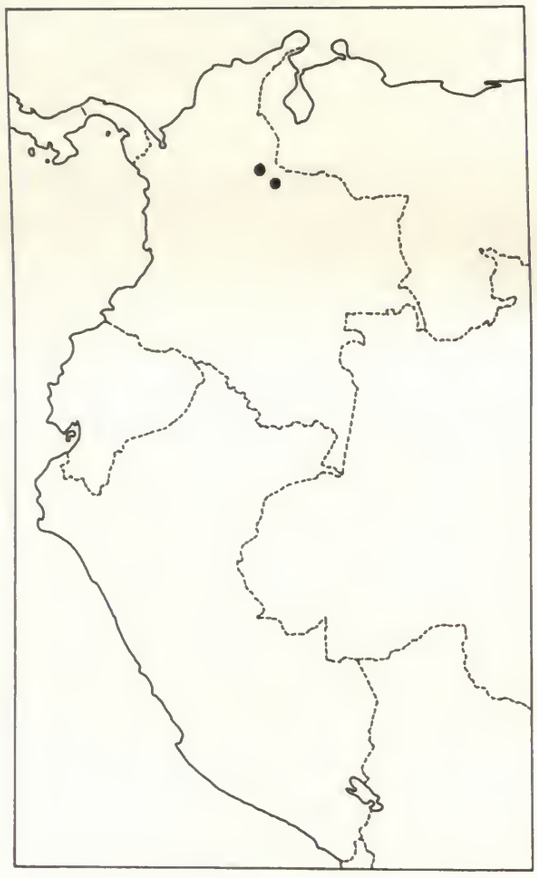
Plate 7. *Pleurothallis dunstervillei* Foldats

Pleurothallis duplex Luer & Escobar, Orquideología 16: 22, 1983.

Ety.: From the Latin *duplex*, "double," referring to the similarity of the dorsal sepal and the synsepal to each other.

Plant small to medium in size, epiphytic, caespitose; roots slender, fasciculate. Ramicauls slender, erect, sharply ancipitous above the middle, 4-12 cm long, 2.5 mm deep at the leaf, with a tubular sheath below the middle and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, ovate, acute, carinate externally, 3.5-6 cm long, 1.3-2 cm wide, the base rounded, subcordate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5 mm long, above the base of the leaf; peduncle filiform, erect, 10-25 mm long; floral bract 4-5 mm long; pedicel 10-18 mm long; ovary 4-6 mm long; **sepals** light yellow, flecked or spotted with purple, fleshy, concave, with a short, red pubescence within, the dorsal sepal narrowly ovate, narrowly obtuse, 9-11 mm long, 3-3.5 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 8.5-10.5 mm long, 4 mm wide; **petals** light yellow, flecked or spotted with purple, fleshy, terete, narrowly linear, acute, 7.5-10 mm long, 0.8 mm wide, with microscopically serrulate margins; **lip** white, suffused with purple above the middle, thick, elliptical-trilobed, acute, 5 mm long, 2 mm wide, minutely serrulate, the lateral lobes below the middle, erect, membranous, triangular, with the anterior margin serrate, the disc with a low callus above the basal margin, the base subtruncate, hinged to the column-foot; **column** white, dotted with purple, semiterete, winged at the apex, 3 mm long, the anther and stigma hooded, subapical, the foot short, thick with the apex of the ovary.

COLOMBIA: Dept. of Norte de Santander: epiphytic in forest between Abrego and Sardinata, alt. 1730 m, 12 Nov. 1981, *C. Luer, J. Luer, R. Escobar & D. Portillo 6684* (Holotype: SEL); Alto de Santa Inés, alt. 2200 m, 13 May 1982, *C. Luer & R. Escobar 7833* (SEL).



This species is apparently endemic in the Eastern Cordillera of Colombia where it has been found on a few occasions. Vegetatively it is similar to the other species of the subgenus, but it is easily identified by the comparatively large lip with a pair of triangular lobes below the middle. The winged column is unique in the genus.

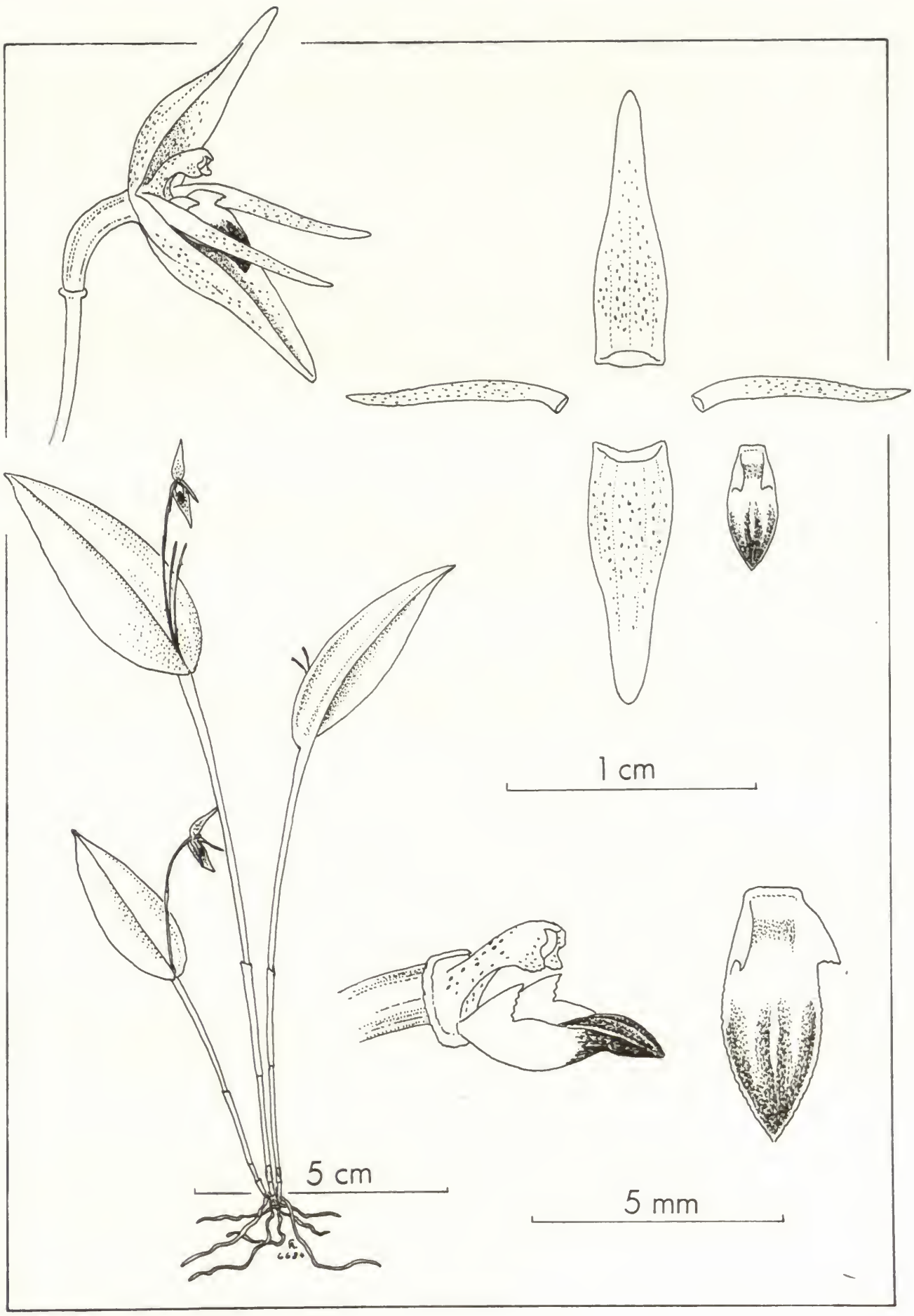


Plate 8. *Pleurothallis duplex* Luer & Escobar

Pleurothallis eumecocaulon Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 187, 1923.

Ety.: From the Greek *eumecocaulon*, "a stem of good length," referring to the ramicaul.

Plant medium in size, epiphytic, shortly repent or loosely caespitose; roots slender. Ramicauls erect, slender, laterally compressed above the middle, 5-12 cm long, up to 1.5 mm deep at the leaf, with a tubular bract below the middle and 2-3 sheaths at the base. **Leaf** coriaceous, erect, narrowly ovate, acute, 3-7 cm long, 0.8-1.5 cm wide, the base cuneate to rounded, shallowly cordate, sessile with the basal lobes more or less inflexed. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 4-5 mm long at the base of the leaf; peduncles 10-20 mm long; floral bract 3-5 mm long; pedicel 10-15 mm long; ovary 3-4 mm long; **sepals** white, sometimes dotted with purple, subcarinate, glabrous, the dorsal sepal narrowly ovate, obtuse, concave, 6-7 mm long, 3-3.5 mm wide, the lateral sepals connate into an ovate, obtuse, concave synsepal, 6 mm long, 3.5 mm wide; **petals** white, more or less fleshy, cellular papillose, narrowly linear-ovate to subfalcate, acute, 5-6 mm long, 1 mm wide; **lip** white, marked with purple, fleshy, ovate, subacute, 3-3.5 mm long, 1.5 mm wide, the disc with a low, rounded, cellular-papillose callus filling most of the area below the middle, and a smaller, similar callus above the middle, with a shallow cavity between near the middle, the base subtruncate, broadly and inflexibly attached to the thickened base of the column; **column** white suffused with purple, stout, semiterete, 1 mm long, the anther apical, exposed, the stigma subapical, the foot thick, obsolescent, with the apex of the column.

COSTA RICA: Prov. of Alajuela: above San Ramón, alt. 1270 m, Jan. 1922, *A. M. Brenes 232* (Holotype: CR); same area, alt. 1200 m, 2 Feb. 1979, *T. Croat 46819* (MO). Prov. of Guanacaste: Monteverde, alt. 1500 m, 21 Aug. 1984, *A. Gentry & W. Haber 48749* (MO); Rincón de la Vieja, alt. 900-1200 m, 27 Jan. 1983, *G. Davidse, L. D. Gómez et al. 23298* (MO).
PANAMA: Prov. of Bocas del Toro: forest between Fortuna and Chiriquí Grande, alt. 1180 m, 17 Feb. 1985, *C. Luer, J. Luer, R. L. Dressler & K. Dressler 10623* (MO). Dept. of Coclé: El Valle, alt. 600-1000 m, 8 Dec. 1938, *P. H. Allen 1237* (MO); El Copé, alt. 2000 ft., 10 Jan. 1978, *B. Hammel 786* (MO).

This species occurs frequently in moist forests of Costa Rica and western Panama. It is represented by numerous specimens in many herbaria.

Pleurothallis eumecocaulon is distinguished by the successive, long-pedicellate, white flowers sometimes marked with purple. The narrow sepals are usually about 7 mm long. The petals are subulate and cellular-glandular. The ovate lip, minutely fringed on the margins, is thickened with a low, round callus below the middle and a low, purple callus above the middle.

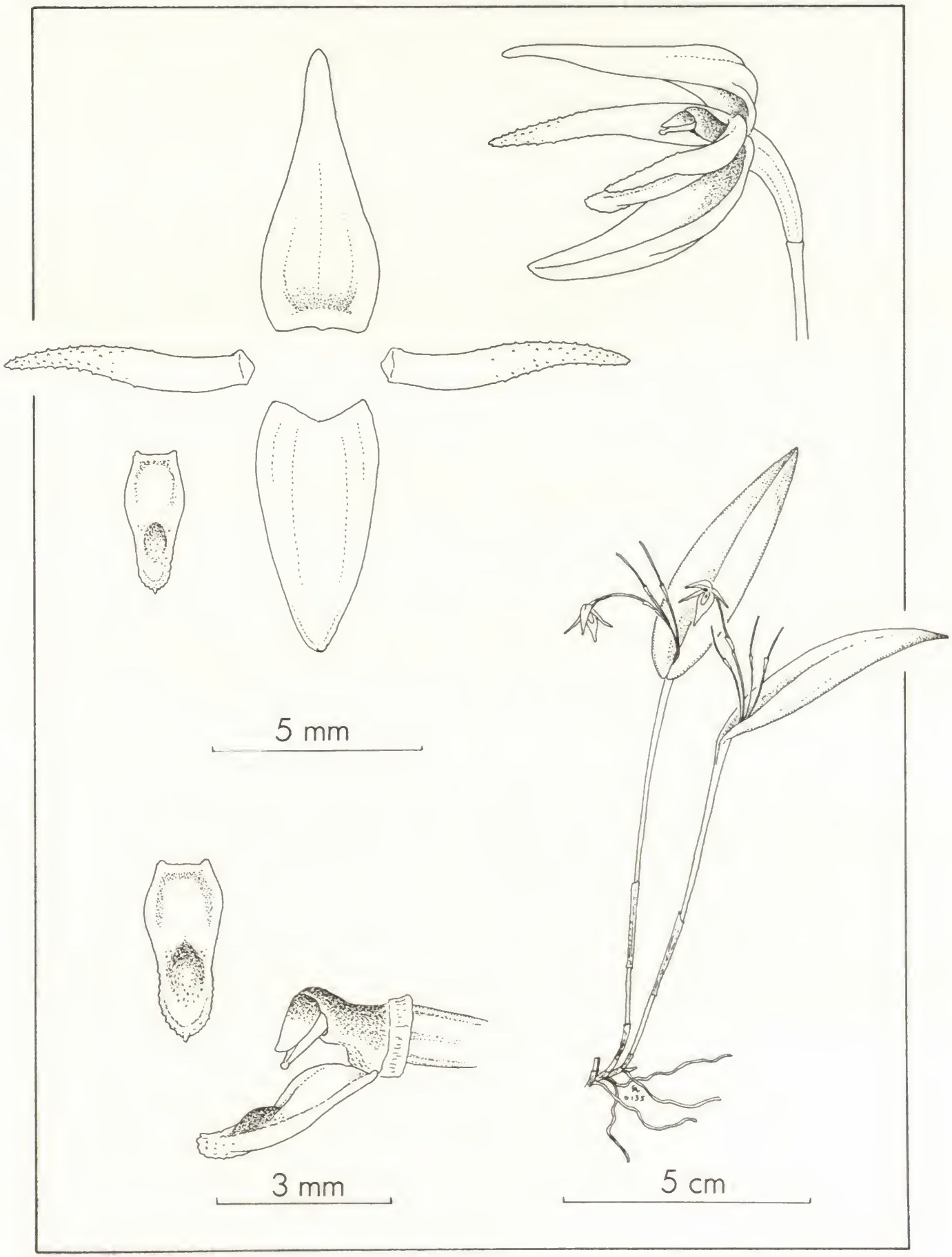


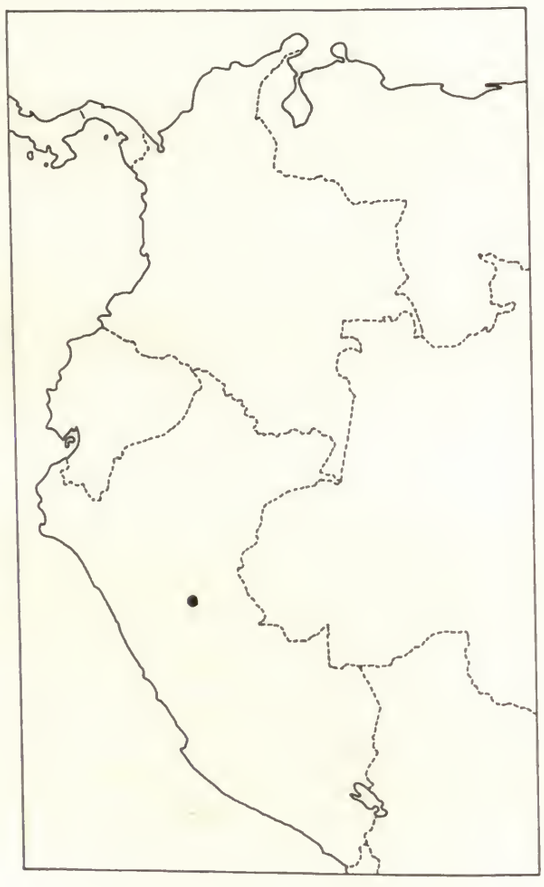
Plate 9. *Pleurothallis eumecocaulon* Schltr.

Pleurothallis furcifera Luer, Selbyana 3: 108, 1976.

Ety.: From the Latin *furcifer*, "bearing a fork," referring to the bifid lip.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, laterally compressed above the middle, 5-7 cm long, 1.5 mm deep at the leaf, with a tubular sheath above the base and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, narrowly ovate, acute, 3-5 cm long, 0.8-1 cm wide, the base cuneate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5 mm long, above the base of the leaf; peduncle filiform, erect, 10-12 mm long; floral bract 3 mm long; pedicel 8-9 mm long; ovary 2 mm long; **sepals** yellow-green, suffused with purple, fleshy, glabrous, concave, the dorsal sepal oblong to subquadrate, obtuse, apiculate, 2 mm long, 1.5 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 2.25 mm long, 2 mm wide; **petals** yellow-green, dotted with purple below the middle, oblong, hastate in the distal third, the marginal angles acute, with the apex rounded, 2 mm long, 1.2 mm wide; **lip** yellow, more or less oblong, 1.5 mm long, 1 mm wide, rounded and deeply concave below the middle, forked above the middle into a pair of oblong, diverging lobes with rounded, minutely erose apices, the base truncate attached to the column-foot; **column** white, suffused with pink, semiterete, 1 mm long, the anther and stigma subapical, the foot short, thick, obsolescent with the apex of the ovary.

PERU: Prov. of Huánuco: near Tingo Maria, collected by Janet Kuhn, flowered in cultivation at J & L Orchids, Easton, CT., 20 Oct. 1975, *C. Luer 598* (Holotype: SEL); flowered in cultivation 12 Dec. 1988, *C. Luer 13814B* (MO).



This unusual species occurs in central Peru where it is presently known from a single collection by Janet Kuhn while traveling with Fred Fuchs and companions. Divisions of this plant are cultivated today in several collections.

Vegetatively this species is similar to the others of the subgenus. The petals broadly expanded at the apex are unique in the subgenus. The lip is concave with a bilobed apex. The column is slender with an apical anther.

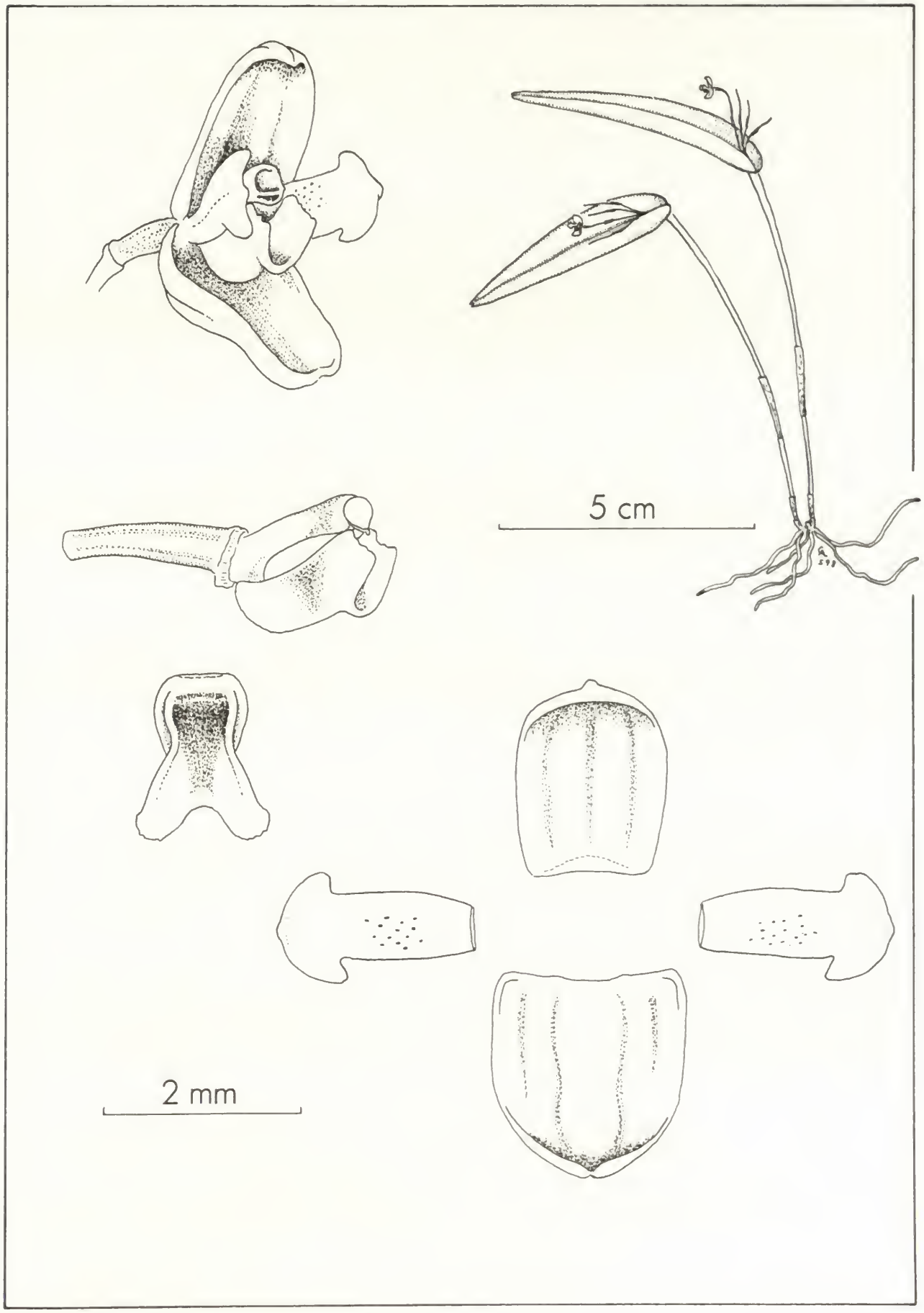


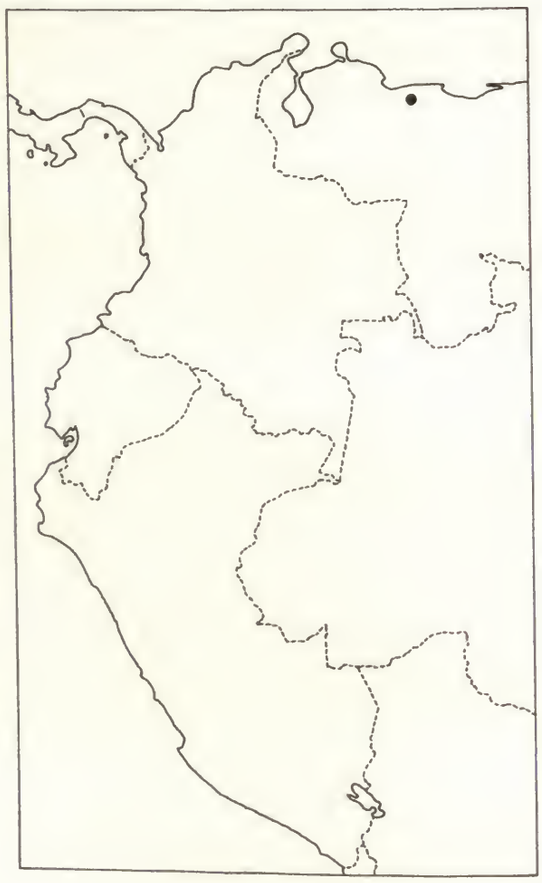
Plate 10. *Pleurothallis furcifera* Luer

Pleurothallis gratiosa Rchb. f., Bonplandia 2: 25, 1854.

Ety.: From the Latin *gratiosus*, "full of pleasure," referring to the graceful flowers.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous above the middle, 8-16 cm long, up to 4 mm deep at the leaf, with a bract below the middle and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, elliptical, obtuse, 4.5-6.5 cm long, 2.5-4 cm wide, the base rounded, cordate, sessile, with the basal lobes more or less inflexed. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 0.5-1 cm long at the base of the leaf; peduncle filiform, ascending to suberect, 2.5-3 cm long; floral bract tubular, 5-6 mm long; pedicel 2.5-3.5 cm long; ovary dark purple, 3 mm long; **sepals** fleshy, subcarinate, concave, white to pale rose, dotted and suffused with rose, the dorsal sepal ovate in the lower quarter, narrowly oblong above, 13 mm long, 5 mm wide expanded, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 13 mm long, 3 mm wide; **petals** white, dotted with purple, fleshy, narrowly subfalcate, acute-acuminate, 11 mm long, 1 mm wide; **lip** dark purple with the apex and lobes rose, 3-lobed, 1.75 mm long, 1 mm wide unexpanded, pubescent, the middle lobe subovoid, thickened, with a cavity above the acute apex, the lateral lobes membranous, obliquely falcate with filiform, uncinate apices at the base, inflexed over the middle lobe, 3 mm wide across the lobes expanded, the base subtruncate, delicately hinged to the base of the column; **column** light rose, dotted with rose, stout, cylindrical, 2 mm long, the anther apical, exposed, the stigma subapical, the base of the column thick with the apex of the ovary.

VENEZUELA: "Caracas, 5000 ft.," March, 1854, *H. Wagener s.n.* (Holotype: W). State of Araguas: Choroní road, Nov. 1956, collected by G. C. K. Dunsterville, 138B, flowered in cultivation at El Hatillo, 26 July 1982, *C. Luer 8096* (SEL).



This species, first of the subgenus to be described, is apparently endemic in the coastal range of Venezuela. The sepals vary from white to light rose with purplish spots. The narrow, pointed petals are more or less falcate. The tiny, pubescent lip is similar to that of *P. crocodiliceps*, but the oblique, inflexed, lateral lobes are broad with the uncinate apices protruding from the base of the lip. No doubt this intricate, insect-like lip is a lure for a specific pollinator.

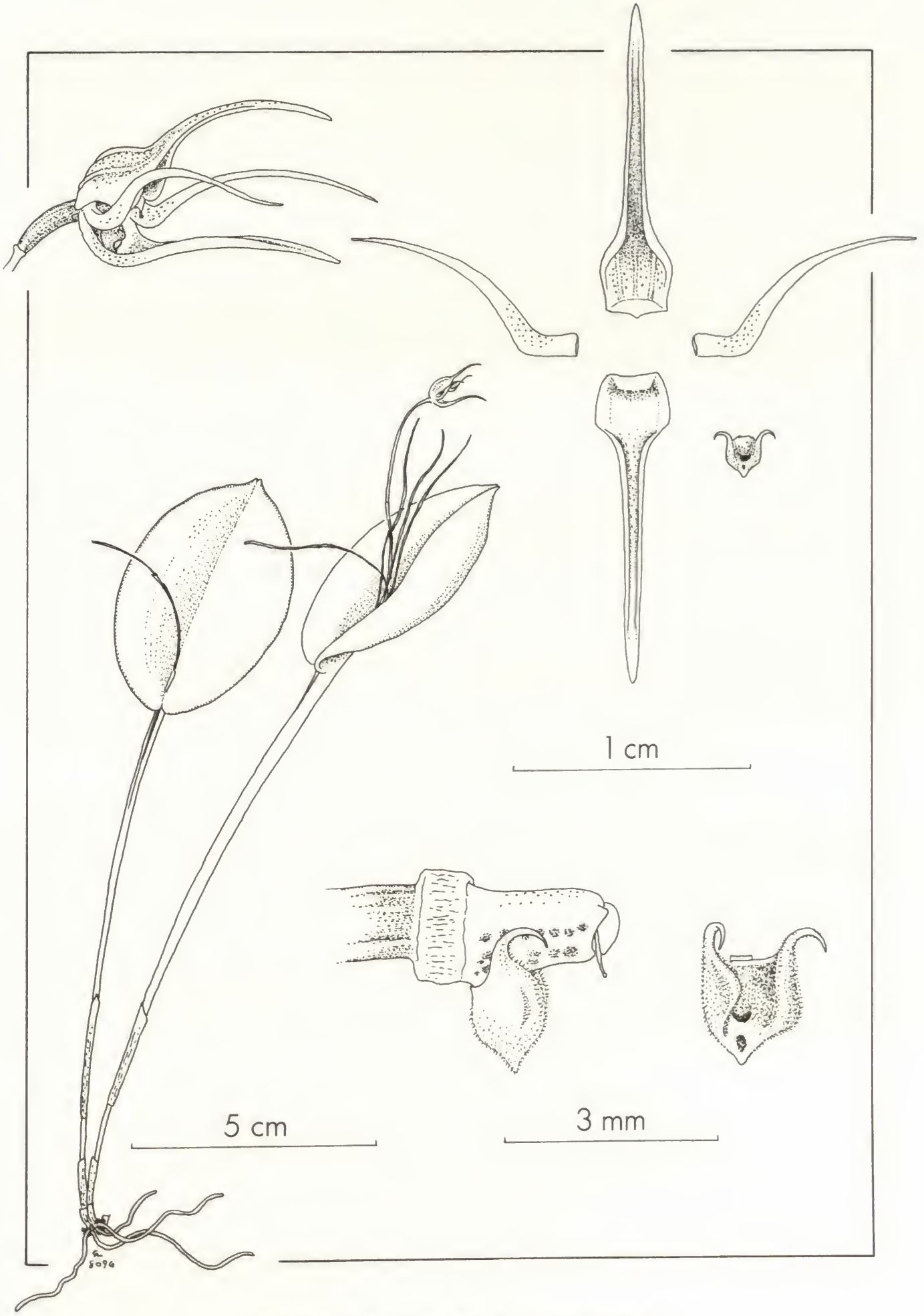


Plate 11. *Pleurothallis gratiosa* Rchb. f.

Pleurothallis harpago Luer, Selbyana 5: 167, 1979.

Ety.: From the Latin *harpago*, "a grappling hook," referring to the uncinate lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, laterally compressed above the middle, 5-13 cm long, up to 2.5 mm deep at the leaf, with a tubular bract below the middle and 2-3 sheaths at the base. **Leaf** coriaceous, erect, narrowly ovate, acute, 4-5 cm long, 1-1.7 cm wide, the base rounded, shallowly cordate, sessile with the basal lobes inflexed. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 3-5 mm long at the base of the leaf; peduncles 17-22 mm long; floral bract 3-4 mm long; pedicel 10-11 mm long; ovary 2.5 mm long; **sepals** white, the dorsal sepal with purple cells scattered within, ovate, narrowly obtuse, concave, 4 mm long, 2.5 mm wide, the lateral sepals connate into an ovate, obtuse synsepal, 4 mm long, 2.5 mm wide; **petals** white with short, purple pubescence and purple-ciliate margins, narrowly ovate, acute, 3.75 mm long, 1 mm wide; **lip** white, marked with purple, shortly purple-pubescent, ovate, concave, fleshy, 3.25 mm long, 1.5 mm wide, the margins ciliate, the apex narrow, acute, inflexed into a prominent, hooklike process, the the base truncate, fixed to the base of the column; **column**white with purple dots, semiterete, stout, 1 mm long, the anther apical, exposed, the stigma subapical, the foot obsolescent.

PANAMA: Prov. of Darien: Cerro Pirre, July 1977, collected by R. L. Dressler, flowered in cultivation 20 Mar. 1978, *C. Luer 2798* (SEL).

This species is apparently endemic in the Darien province of Panama where it has been collected but once by R. L. Dressler. It is closely allied to *P. eumecocaulon*, but is distinguished by smaller flowers with ciliated petals and a ciliate lip with a prominent, incurved, hooklike apex.

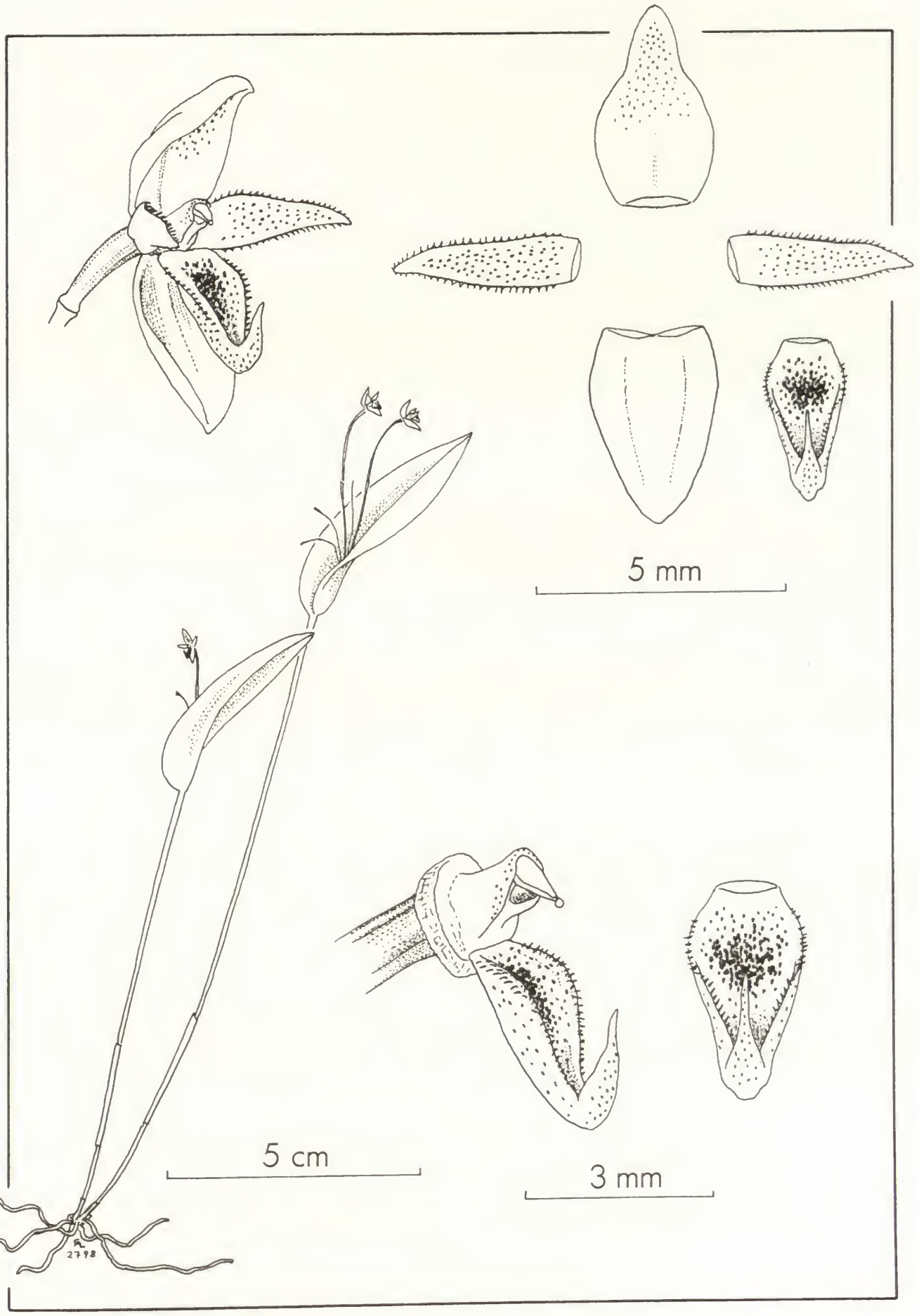


Plate 12. *Pleurothallis harpago* Luer

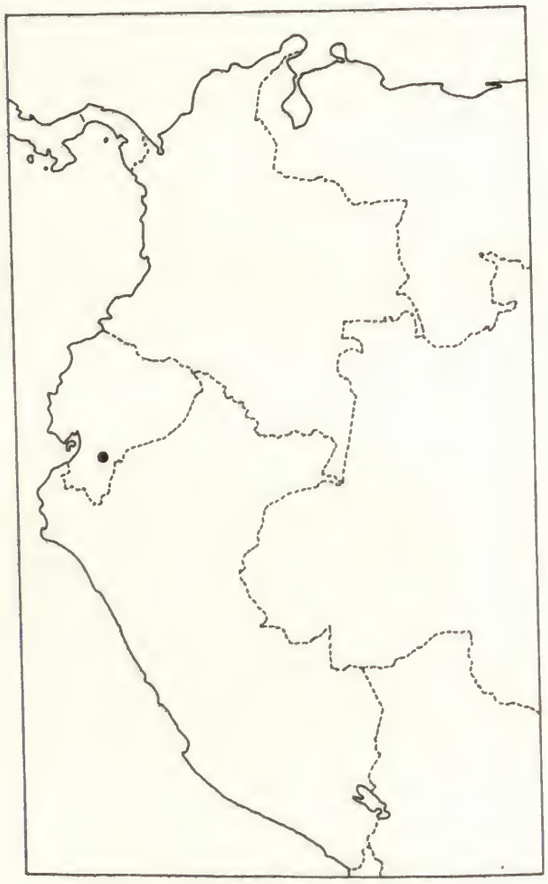
Pleurothallis inornata Luer & Hirtz, sp. nov.

Ety.: From the Latin *inornatus*, "unadorned," referring to the simple flower-parts.

Inter species subgeneris *Ancipitiae* Luer species haec habitu parvo, petalis erectis, labello integro plano oblongo-ovato acuto differt.

Plant small, epiphytic, caespitose; roots densely fasciculate, slender. Ramicauls erect, slender, sharply ancipitous, 3.5-6 cm long, up to 1.5 mm deep at the leaf, with 2-3 tubular bracts near and at the base. **Leaf** coriaceous, more or less spreading, ovate, acute, 2.75-3 cm long, 1-1.2 cm wide, the base rounded, shallowly cordate, sessile. **Inflorescence** a fascicle of solitary, successive, non-resupinate flowers borne from a reclining spathe 5-6 mm long at the base of the leaf; peduncles 2-3 mm long, within the spathe; floral bract 2-3 mm long; pedicel 3-4 mm long; ovary 3 mm long; **sepals** translucent light brown, the middle sepal ovate, subacute, concave, 4.5 mm long, 2.75 mm wide expanded, 3-veined, the lateral sepals connate into an ovate, concave synsepal 4.24 mm long, 2.5 mm wide unexpanded, 4-veined, the obtuse apex minutely bifid; **petals** translucent yellow, erect, parallel to the dorsal sepal, linear-oblong, acute, 4 mm long, 0.75 mm wide, 1-veined; **lip** yellow, oblong-ovate, acute, 4 mm long, 1.5 mm wide, the disc flat with 3 slightly raised nerves, the base truncate, shallowly transversely concave at the attachment to the column-foot; **column** yellow, semiterete, 2 mm long, the anther subapical, exposed, the stigma subapical, the foot thick, pedestal-like.

ECUADOR: Prov. of Morona-Santiago: epiphytic in cloud forest north of Gualaquiza, alt. 1700 m, 17 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11873* (Holotype: MO); same area, alt. 1800 m, 31 Jan. 1989, *S. Dalström & T. Höijer 1220* (MO).



This species, apparently endemic in a small area of southern Ecuador, is one of the smallest of the subgenus. The petals are held erect in the non-resupinate flower parallel to the margins of the dorsal sepal. Although this subgenus is noted for the bizarre lips, the lip of this species is simple as it is in *P. anceps* and *P. eumecocaulon*, but proportionately large, nearly filling the concavity of the synsepal.

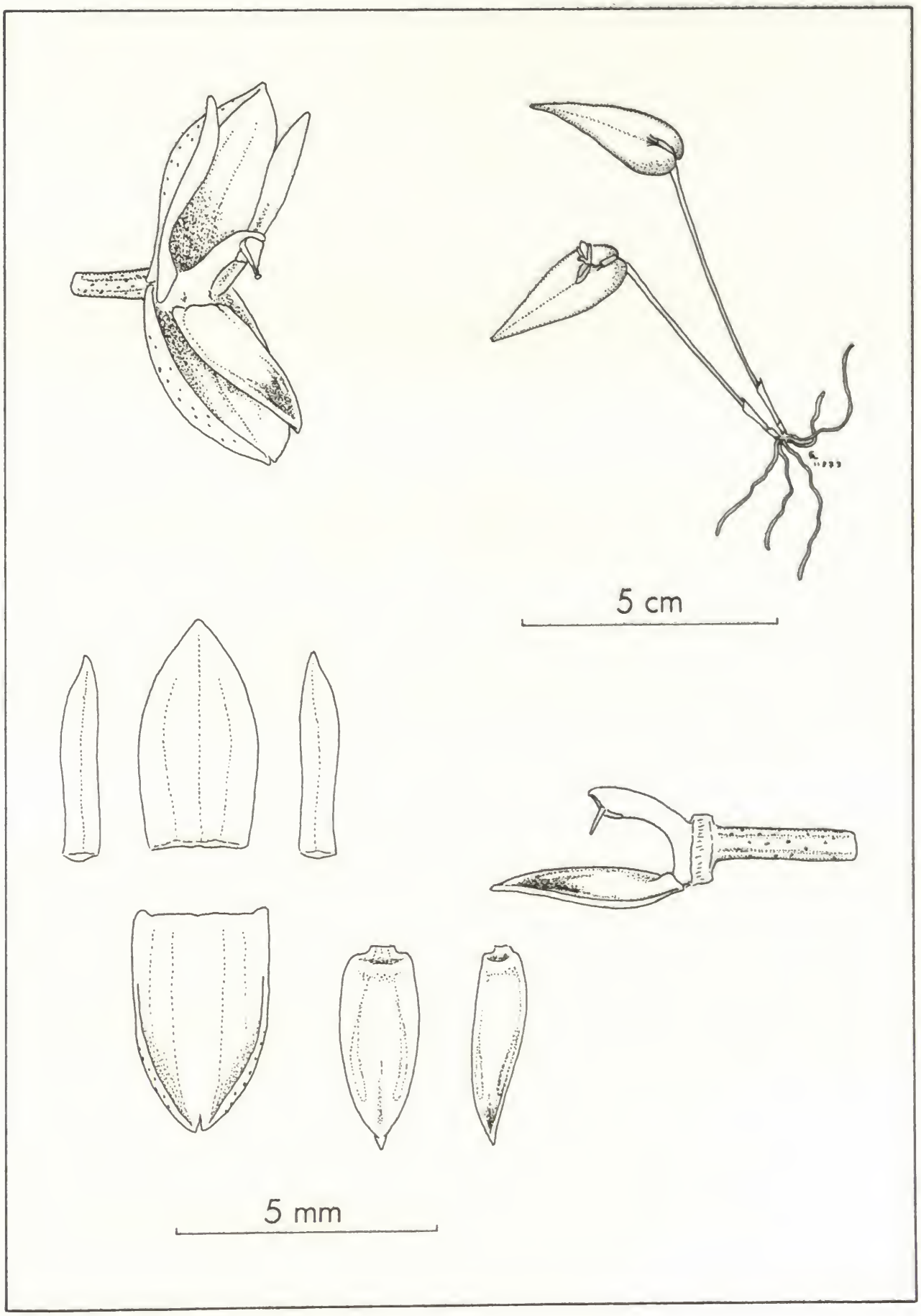


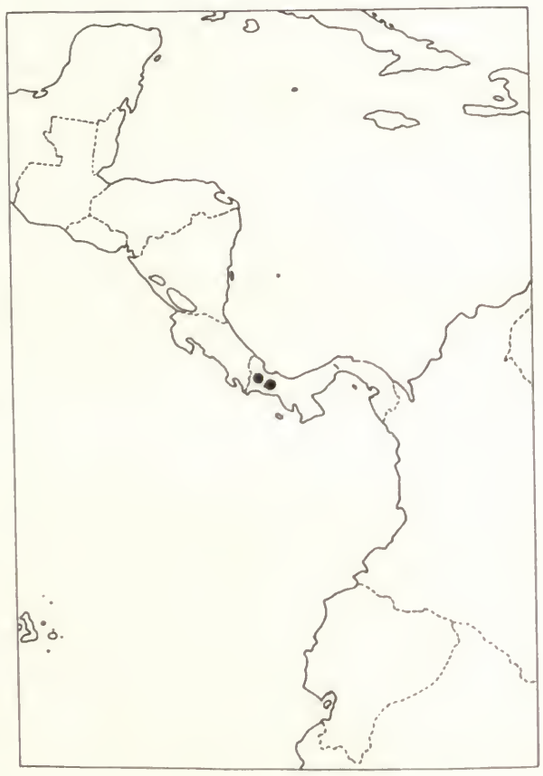
Plate 13. *Pleurothallis inornata* Luer & Hirtz

Pleurothallis instar Luer, Selbyana 3: 320, 1977.

Ety.: From the Latin *instar*, "a likeness," referring to the similarity to *P. eumecocaulon*.

Plant small to medium in size, epiphytic, shortly repent or loosely caespitose; roots slender. Ramicauls erect, slender, laterally compressed above the middle, 3-10 cm long, up to 1.5 mm deep at the leaf, with a tubular bract below the middle and 2-3 sheaths at the base. **Leaf** coriaceous, erect, narrowly ovate, acute, 3-4 cm long, 0.8-1.2 cm wide, the base cuneate to rounded, shallowly cordate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 4-5 mm long at the base of the leaf; peduncles 10-20 mm long; floral bract 3 mm long; pedicel 10-15 mm long; ovary 3 mm long; **sepals** lavender, suffused and mottled with purple, subcarinate, glabrous, the dorsal sepal ovate, acute, concave, 4.5-5 mm long, 3 mm wide, the lateral sepals connate into an ovate, subacute, concave synsepal, 4-4.5 mm long, 3 mm wide; **petals** white, marked with purple, more or less fleshy, cellular papillose, narrowly ovate, acute, 4.5 mm long, 1.5 mm wide; **lip** lavender, marked with purple, fleshy, ovate, subacute, 3 mm long, 1.75 mm wide, the disc with a low, rounded, cellular-papillose callus filling most of the area below the middle, flat above the middle, the base subtruncate, broadly and inflexibly attached to the thickened base of the column; **column** white suffused with purple, stout, semiterete, 1 mm long, the anther apical, exposed, the stigma subapical, the foot thick, obsolescent, with the apex of the column.

PANAMA: Prov. of Chiriquí: Cerro Hornito, alt. 1700 m, 15 Dec. 1976, *C. Luer, A. Luer, R. L. Dressler, N. H. Williams & F. L. Stevenson 1385* (Holotype: SEL); confluence of Río Hornito and Río Chiriquí, alt. 1050-1100 m, 11 Nov. 1980, *W. D. Stevens 18388* (MO); Quebrada Los Chorros, alt. 1100 m, 18 Sept. 1984, *H. W. Churchill & A. Churchill 6064* (MO); near the Fortuna dam, alt. 1100 m, 16 Feb. 1985, *C. Luer, J. Luer, R. L. Dressler & K. Dressler 10583* (MO).



This species is apparently endemic in one area in western Panama where it is locally common. It is very closely related and similar to the frequent *P. eumecocaulon* from Costa Rica and western and central Panama. *Pleurothallis instar* is distinguished by the smaller habit with smaller leaves; smaller, lavender, purplish mottled flowers; and the lip lacking a callus on the apical half.

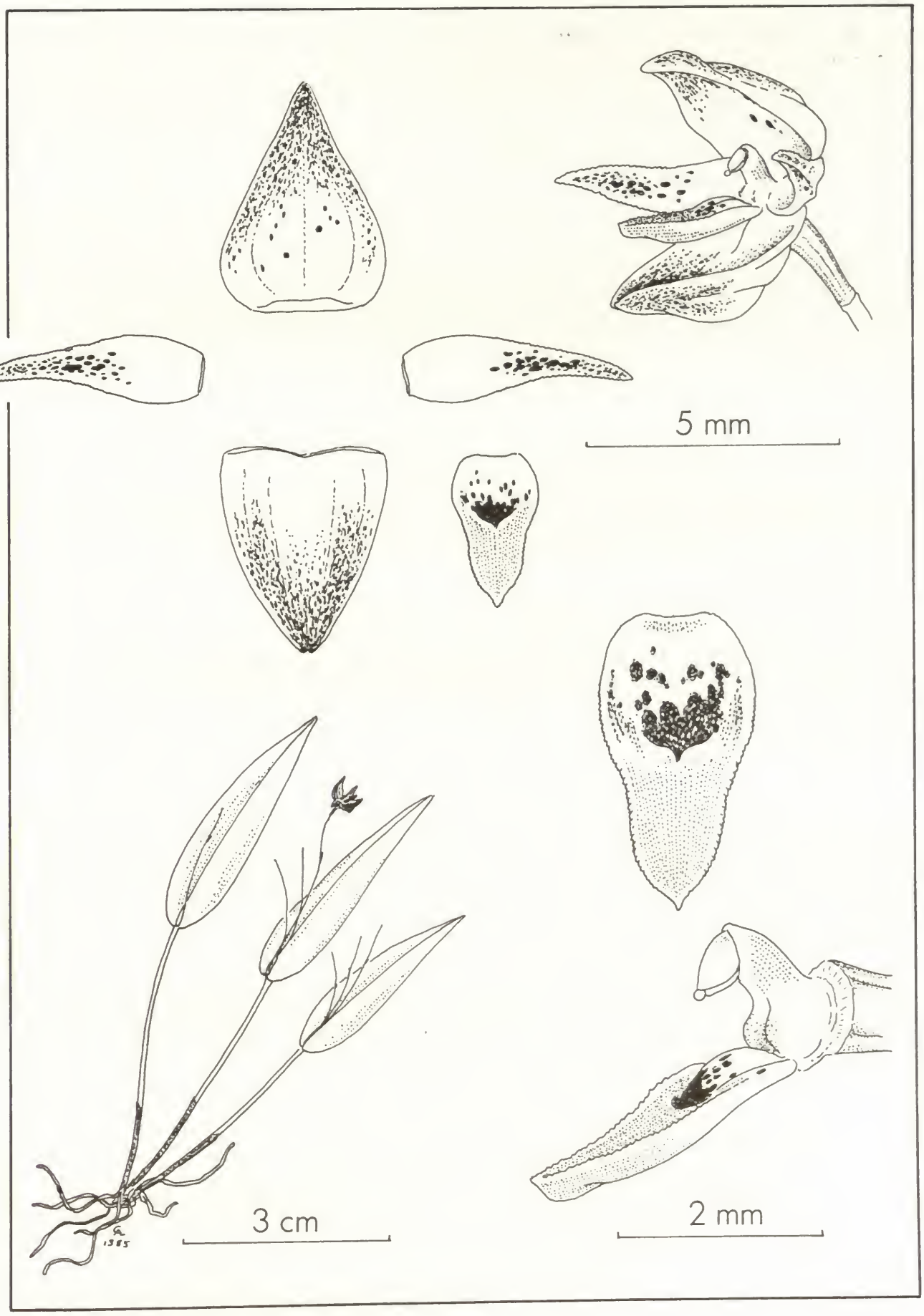


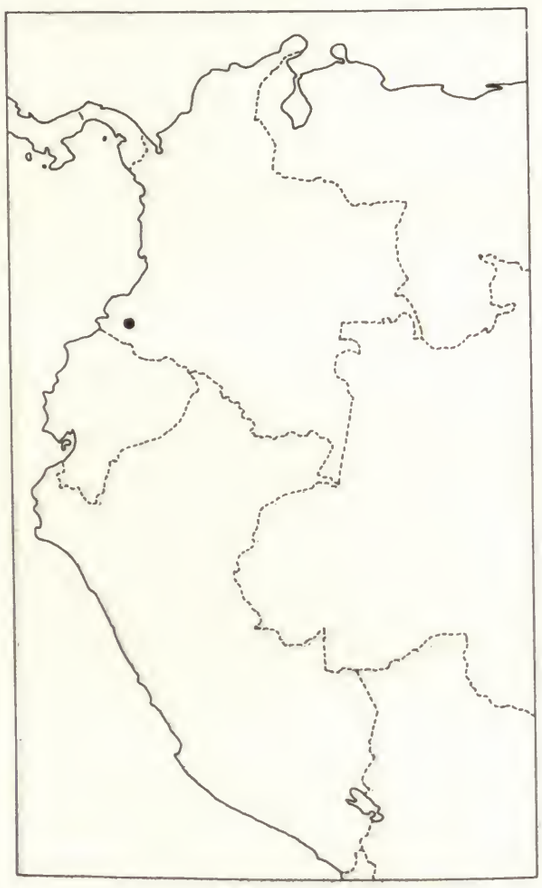
Plate 14. *Pleurothallis instar* Luer

Pleurothallis membracidoides Luer, Phytologia 47: 77, 1980.

Ety.: Named for the resemblance of the lip to a treehopper of the family *Membracidae* of the order Homoptera of insects.

Plant medium in size, epiphytic, caespitose; roots fine, fasciculate. Ramicauls slender, erect, sharply ancipitous above the middle, 6-12 cm long, 3 mm deep at the leaf, with a tubular sheath above the base and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, ovate, acute, carinate externally, 4.5-6.5 cm long, 2-3 cm wide, the base obtusely cuneate to rounded, sessile, with the sides decurrent on the ramicaul for 3-5 mm. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5 mm long, above the base of the leaf; peduncle filiform, erect, 15 mm long; floral bract 5 mm long; pedicel 12-17 mm long; ovary 3 mm long; **sepals** yellow, suffused with brown, fleshy, glabrous, concave, the dorsal sepal narrowly ovate, narrowly obtuse, 9 mm long, 3.5 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 9 mm long, 4 mm wide; **petals** yellow, brownish below the middle, fleshy, elliptical-subfalcate, acute, 7 mm long, 1.5 mm wide, with minutely serrate margins; **lip** yellow-white above the middle, dark purple-brown below the middle, thick, subquadrate-trilobed, 1.3 mm long, 1.25 mm wide, the anterior margin truncate with a deflexed, obtuse apex, with a short, pointed tooth externally on either side, the lateral lobes erect, membranous, narrowly obtuse, the disc with a pair of low, rounded calli above the middle, the base rounded, transversely concave to accommodate the apex of the column-foot, hinged beneath; **column** yellow-white, semiterete, 2.25 mm long, the anther and stigma hooded, subapical, the foot short, thick, with the apex of the ovary.

COLOMBIA: Dept. of Nariño: epiphytic in forest north of Ricaurte, alt. 1600 m, 3 Nov. 1979, *C. Luer, J. Luer, A. Hirtz & K. Walter 4580* (Holotype: SEL).



This species is apparently endemic in southernmost Colombia. Vegetatively it is similar to many of the other species of the subgenus, but it is easily identified by the tiny lip that resembles a leafhopper.

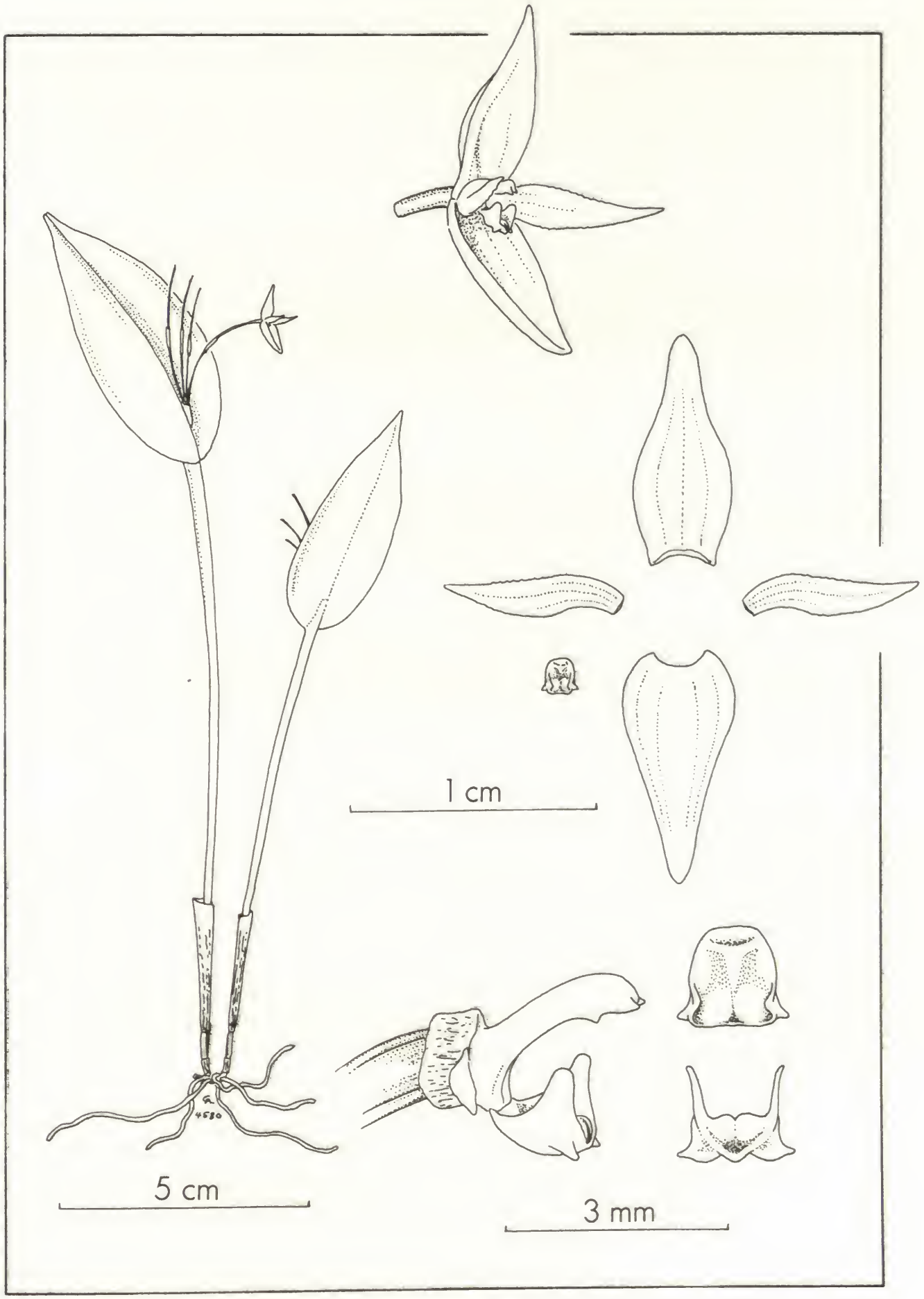


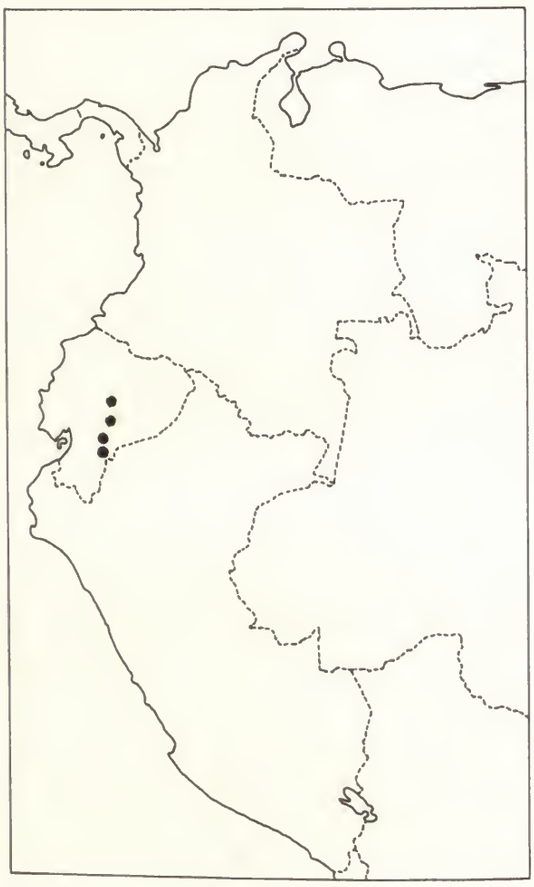
Plate 15. *Pleurothallis membracidoides* Luer

Pleurothallis niveoglobula Luer, Selbyana 1: 258, 1975.

Ety.: From the Latin *niveoglobulus*, "a little, snow white ball," referring to the flower.

Plant small to medium in size, epiphytic, densely caespitose; roots fine, densely fasciculate. Ramicauls erect, slender, laterally compressed above the middle, 3-11 cm long, up to 2 mm deep at the leaf, with a tubular bract above the base and 2-3 sheaths at the base. **Leaf** coriaceous, more or less spreading, ovate, acute, 1.5-4 cm long, 1-2 cm wide, the base rounded, shallowly cordate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5-6 mm long at the base of the leaf; peduncle suberect, 4-6 mm long; floral bract 2 mm long; pedicel 9-10 mm long; ovary 1.5 mm long; flowers minute, subspherical, snow white, glabrous; **sepals** concave, only slightly spreading, the dorsal sepal suborbicular, obtuse, 2 mm long, 1.6 mm wide, the lateral sepals connate into a suborbicular synsepal similar to the dorsal sepal, 2 mm long, 2 mm wide; **petals** oblong-obovate, oblique, subcarinate, the obtuse apex fleshy, 1.5 mm long, 1 mm wide; **lip** fleshy, broadly ovate-cordate, obtuse, 1 mm long, 1 mm wide, the base broadly subtruncate, connate to the base of the column; **column** stout, cylindrical, 1 mm long, the anther apical, the stigma subapical, the foot obsolescent.

ECUADOR: Prov. of Pastaza: epiphytic in forest west of Puyo along the Río Pastaza, alt. 900 m, 25 July 1975, *C. Luer, G. Luer & S. Wilhelm 506* (Holotype: SEL); vicinity of Puyo, alt. 750-1000 m, Sept. 1939, *A. F. Skutch 4539* (MO); north of Puyo, alt. 1000 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11208* (MO). Prov. of Morona-Santiago: north of Gualaquiza, alt. 900 m, 27 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10981* (MO); Río Yunganza between Limón and Mendez, alt. 1000 m, 7 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12720* (MO). Prov. of Napo: west of Tena, alt. 600 m, 26 July 1975, *C. Luer, G. Luer & S. Wilhelm 507* (SEL). Zamora-Chinchipe: Cordillera del Condor, epiphytic in cloud forest east of Los Encuentros, alt. 1450 m, 18 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13433* (MO).



This locally common and abundant species, known to many hobbyists as "snow ball," is found at relatively low altitudes on the eastern slopes of the Andes of central and southern Ecuador. The tiny, white, globular flowers are produced continuously throughout the year. The orbicular sepals are deeply concave and the simple lip is ovate.

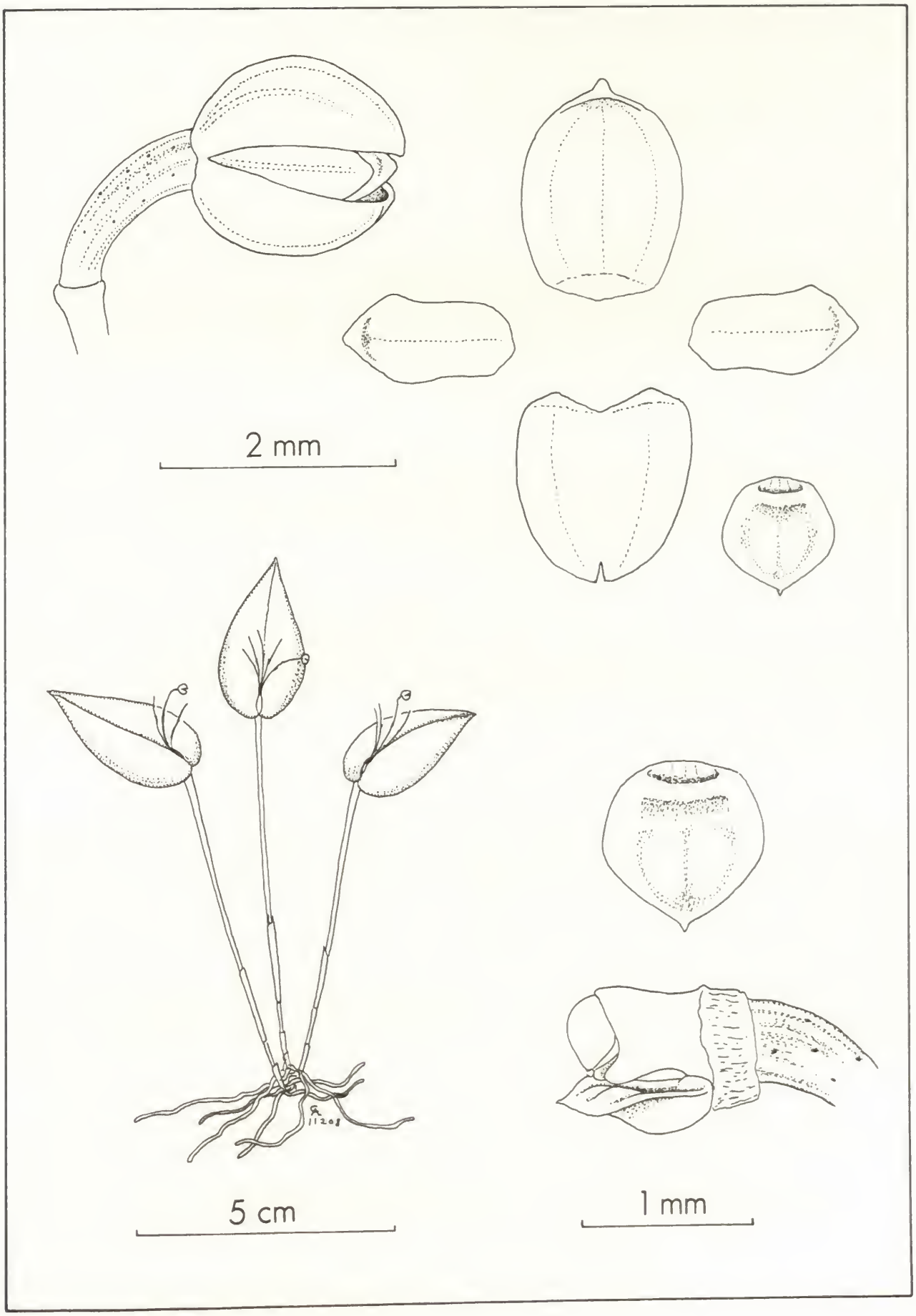


Plate 16. *Pleurothallis niveoglobula* Luer

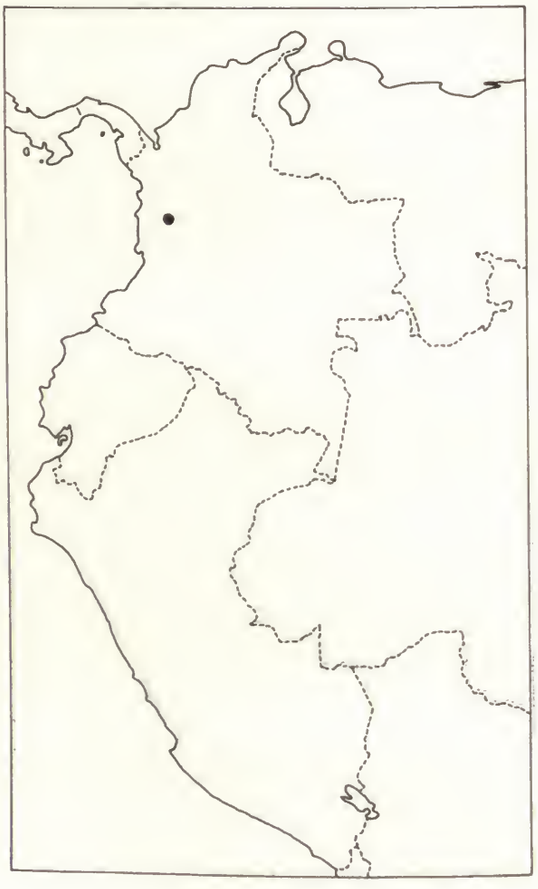
Pleurothallis odobeniceps Luer, sp. nov.

Ety.: From the Latin *odobeniceps*, "walrus-headed," referring to the shape of the lip.

Species haec *P. anthraci* Luer & Escobar similis, sed labello minute papilloso oblongo subtruncato leviter retuso cum lobis basalibus long-uncinatis differt.

Plant medium in size, epiphytic, caespitose; roots slender, densely fasciculate. Ramicauls erect, slender, sharply ancipitous, 6-11 cm long, up to 1.5 mm deep at the leaf, with a tubular bract above the base and 2-3 sheaths at the base. **Leaf** coriaceous, suberect to spreading, ovate, acute, 3.5-5.5 cm long, 1.3-2.3 cm wide, the base rounded, shallowly cordate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 3-4 mm long at the base of the leaf; peduncles 10-12 mm long; floral bract 6 mm long; pedicel 15 mm long; ovary 4 mm long; **sepals** fleshy, light purple, mottled with dark purple, glabrous, the dorsal sepal narrowly ovate, acute, lightly acuminate above the middle, concave below the middle, 9 mm long, 3 mm wide, 3-veined, the lateral sepals connate into a narrowly ovate, narrowly subtruncate-retuse, concave synsepal, 9 mm long, 3 mm wide, 4-veined; **petals** semiterete, light purple, cellular-glandular, linear-subulate, acute, 8.5 mm long, 0.75 mm wide; **lip** dark purple, densely short-pubescent above the middle, fleshy, oblong, 2.5 mm long, 1 mm wide, the apex subtruncate, lightly retuse, the base with a pair of membranous, narrowly uncinate, forwardly curved lobes, 1.5 mm long, the base subtruncate, concave to accommodate the bulbous apex of the column-foot; **column** suffused with purple, semiterete, longitudinally winged, 1 mm long, the anther subapical, the stigma ventral, the foot short with a small, free, bulbous apex.

COLOMBIA: Dept. of Chocó: epiphytic in wet forest between Salgar and El Dauro, alt. 2280 m, 29 Sept. 1987, *J. L. Zarucchi, A. E. Brant & J. Betancur 5950* (Holotype: MO), C. Luer illustr. 14371.



Vegetatively this species is very similar to most of the other species of the subgenus, particularly similar to *P. anthrax*, but the lips of the two species are different. The lip of *P. odobeniceps* is thick, minutely pubescent, and oblong with a broad, obscurely bilobed apex. From the base a pair of long, slender, membranous lobes curve forward like the tusks of a microscopic walrus.

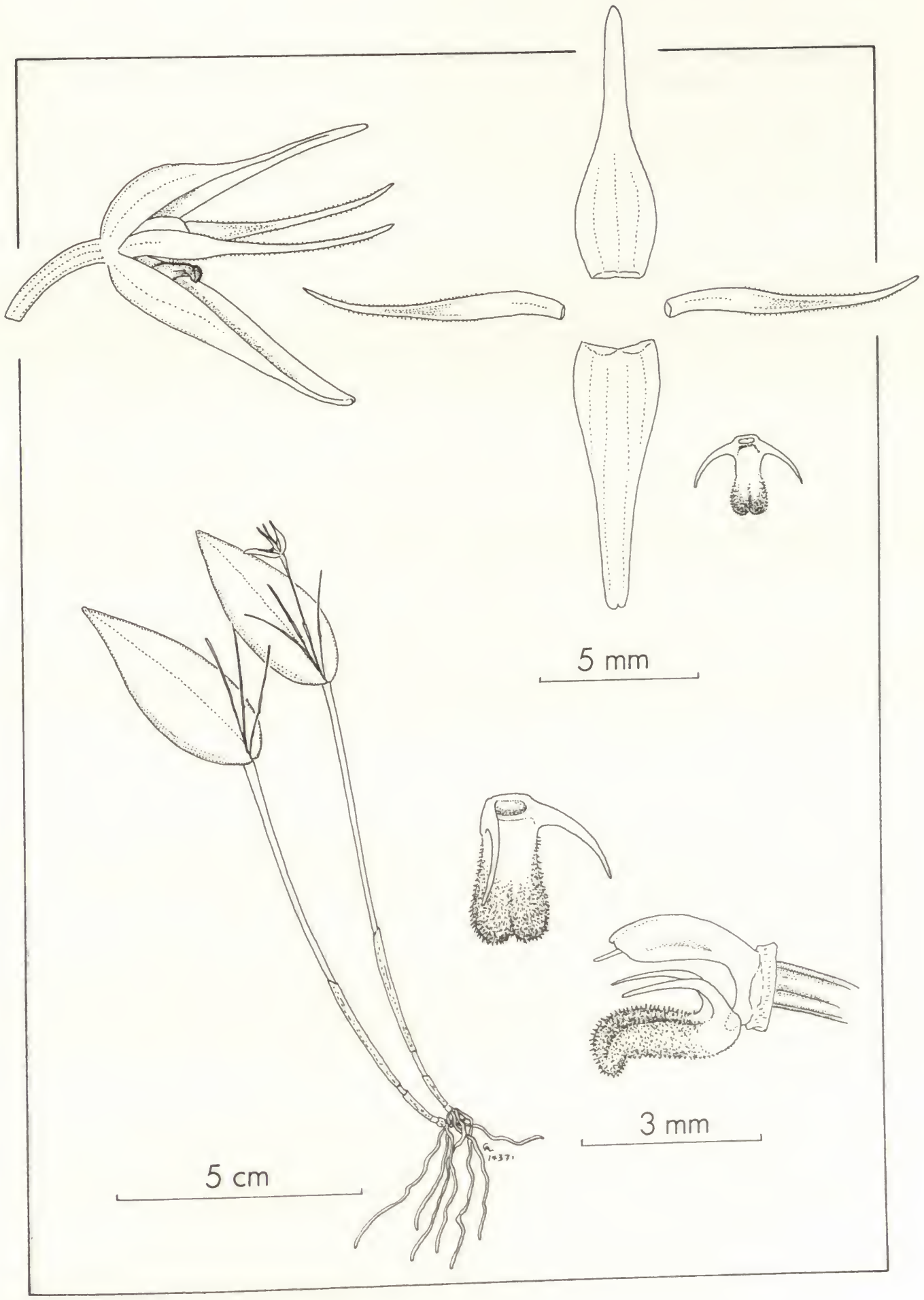


Plate 17. *Pleurothallis odobeniceps* Luer

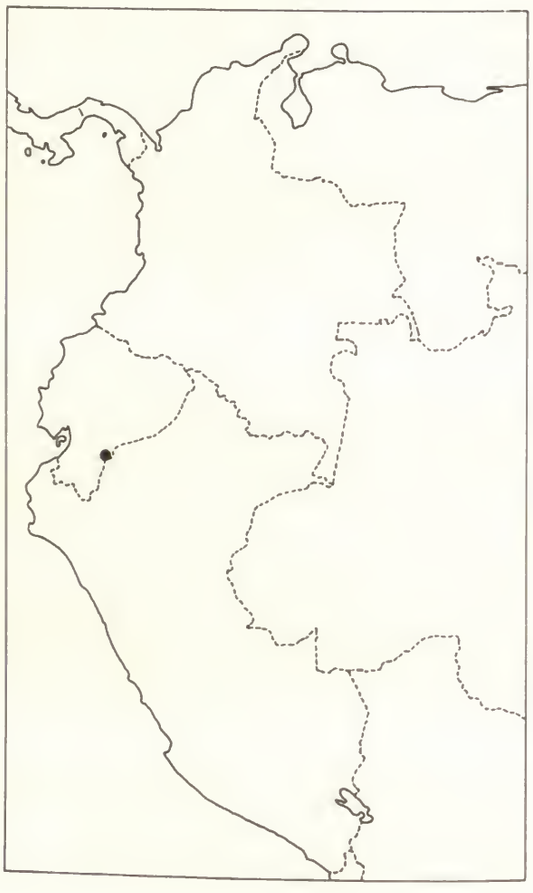
Pleurothallis onagriceps Luer & Hirtz, sp. nov.

Ety.: From the Latin *onagriceps*, "donkey-headed," referring to the shape of the lip.

Species haec *P. crocodilicepis* Rchb. f. affinis, sed sepalis acutis infra medium negro punctatis et labelli alis late membranaceis plicatis differt.

Plant medium in size, epiphytic, caespitose; roots fine, densely fasciculate. Ramicauls erect, slender, sharply ancipitous, 5-13 cm long, up to 2.5 mm deep at the leaf, with a tubular bract above the base and 2-3 sheaths at the base. **Leaf** coriaceous, more or less spreading, ovate, acute, 4.5-6 cm long, 2-2.5 cm wide, the base rounded, shallowly cordate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 3-4 mm long at the base of the leaf; peduncles 10-15 mm long; floral bract 5-6 mm long; pedicel 11-12 mm long; ovary 4-5 mm long; **sepals** fleshy, yellow, dotted with black below the middle, the dorsal sepal narrowly ovate, acute, concave, 12 mm long, 4 mm wide expanded, 3-veined, the lateral sepals connate into an ovate, acute, concave synsepal, 11 mm long, 4.5 mm wide expanded, 4-veined; **petals** semiterete, yellow, erect, linear-oblong, acute, 10-11 mm long, 1.5 mm wide; **lip** densely short-pubescent, fleshy, purple black, subovoid, obtuse, with a subapical cavity, 1.75 mm long, 1.75 mm wide, with infolded broad, membranous, rose colored wings that meet in the midline to cover the body of the lip, 4.5 mm wide expanded, the base subtruncate, shallowly concave with a slender, membranous attachment to the back of a rounded process at the base of the column; **column** white with purple dots, semiterete, 3.5 mm long, the anther subapical, exposed, the stigma subapical, the foot obsolescent.

ECUADOR: Prov. of Zamora-Chinchipe: Cordillera del Condor, epiphytic in cloud forest east of Los Encuentros, alt. 1550 m, 18 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13459* (Holotype: MO).



This species, known from only one collection in the Cordillera del Condor, was discovered by Walter Teague. Vegetatively it is typical for the subgenus. The flowers are most similar to those of *P. crocodiliceps*, but instead of white and obtuse, the sepals are yellow, dotted with black below the middle and acute. The tiny lip also shows a close relationship, but instead of narrowly pointed, the lateral lobes are broad and membranous, and folded over the front of the lip like a pair of large, hairy, floppy ears.

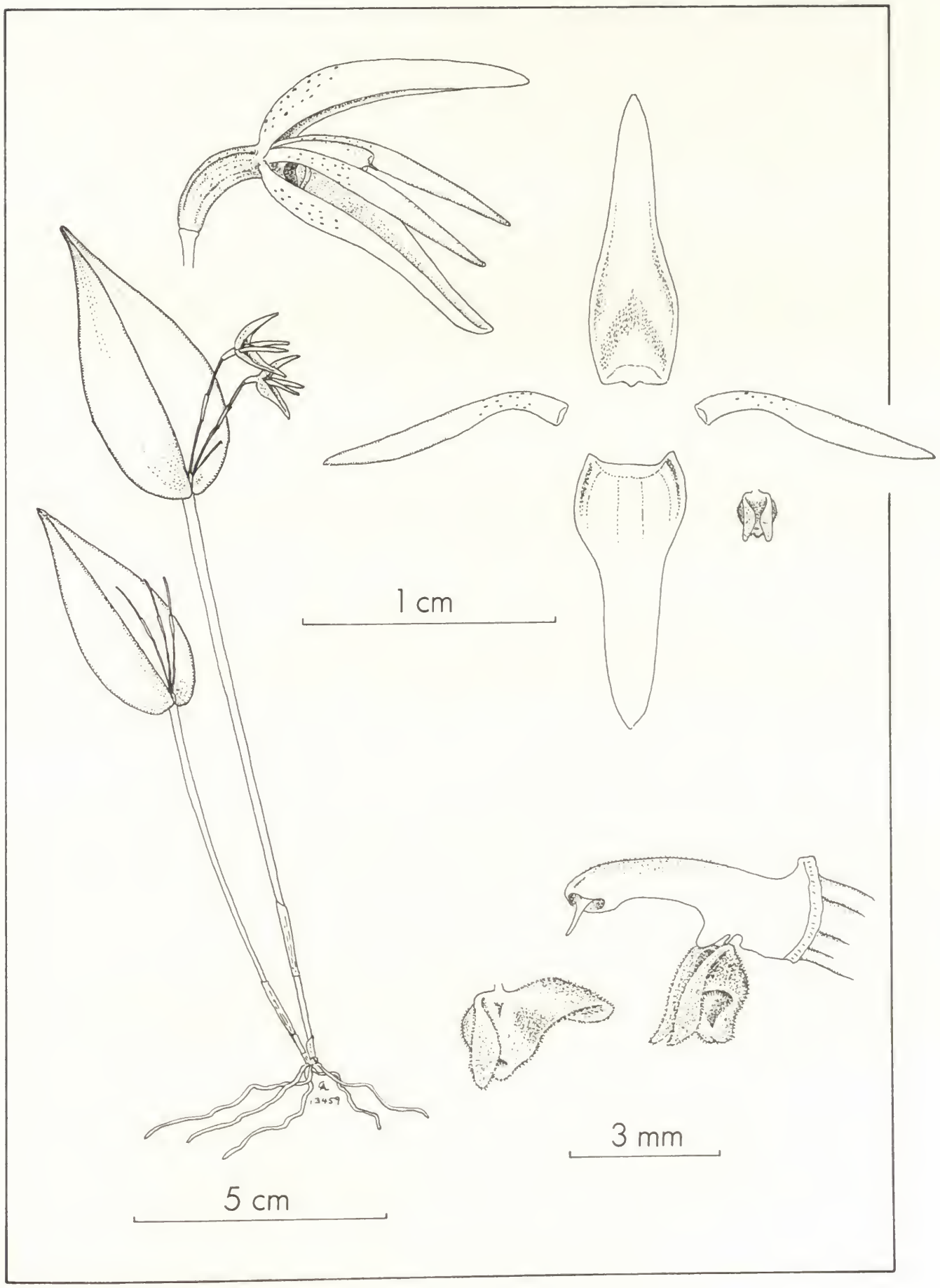


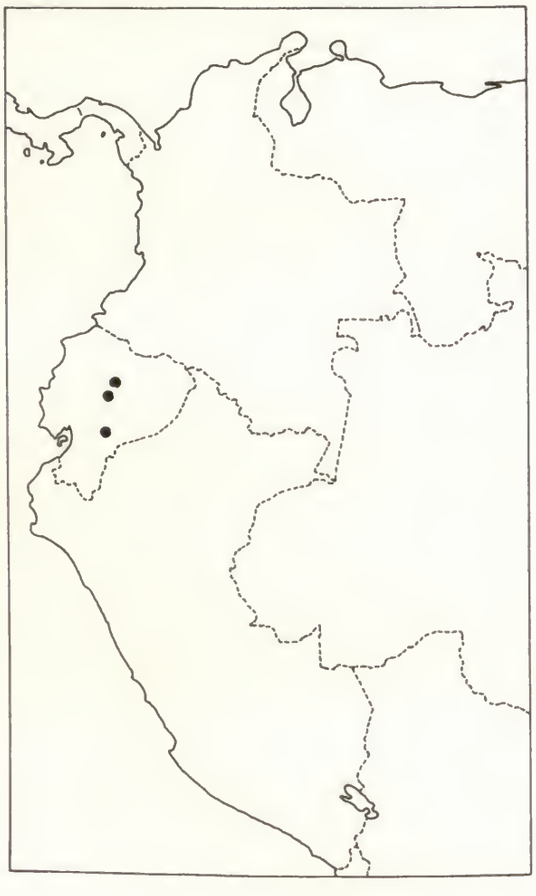
Plate 18. *Pleurothallis onagriceps* Luer & Hirtz

Pleurothallis praecipua Luer, Phytologia 46: 370, 1980.

Ety.: From the Latin *praecipuus*, "peculiar," referring to the unusual lip.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous above the middle, 5-16 cm long, 2 mm deep at the leaf, with a tubular sheath below the middle and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, narrowly ovate, acute, carinate externally, more or less conduplicate, 3.5-5 cm long, 1.2-1.5 cm wide, the base obtusely cuneate, sessile, with the sides decurrent on the ramicaul about 3 mm. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 4-5 mm long at the base of the leaf; peduncle filiform, erect, 2-2.5 cm long; floral bract 5 mm long; pedicel 1-1.5 cm long; ovary 4 mm long; **sepals** lavender to white with purple dots, glabrous, fleshy, concave, the dorsal sepal narrowly ovate-triangular, acute, 10 mm long, 3.5 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 10 mm long, 4 mm wide; **petals** white, dotted with purple, fleshy, narrowly ovate-subfalcate, 9 mm long, 2 mm wide, with minutely serrate margins; **lip** white, transversely obovate-trilobed, 3.5 mm long, 4.5 mm wide expanded, the apical lobe purple, thick, rounded, shortly apiculate, with minutely serrulate margins, separated from the lateral lobes by a deep sinus on either side, the lateral lobes erect, broadly rounded, oblique, with the apex abruptly acute adjacent to the sinus, the disc with a small cavity on the anterior lobe, externally with a pair of pointed calli on either side above the middle, the base broadly cuneate, transversely grooved, delicately hinged to the column-foot; **column** white, slender, arcuate, semiterete, 4.5 mm long, the anther and stigma subapical, the foot short, thick, with the apex of the ovary.

ECUADOR: Prov. of Napo: epiphytic in forest north of Baeza, alt. 1650 m, 10 Oct. 1979, *C. Luer, J. Luer & A. Hirtz 4484* (Holotype: SEL); north of El Chaco, alt. 1800 m, 11 Jan. 1986, *S. Dalström & T. Höijer 1038* (MO). Prov. of Morona-Santiago: epiphytic in forest along the new road between Macas and Guamote, alt. 1750 m, 6 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12704* (MO).



This species is apparently endemic in eastern Ecuador. The three-lobed lip immediately distinguishes it from its allies. The middle lobe is rounded, apiculate, thick, flat, minutely serrulate, and separated from the broadly, rounded, oblique lateral lobes by a deep sinus. Externally are a pair of short, thick horns. The column is long for the subgenus.

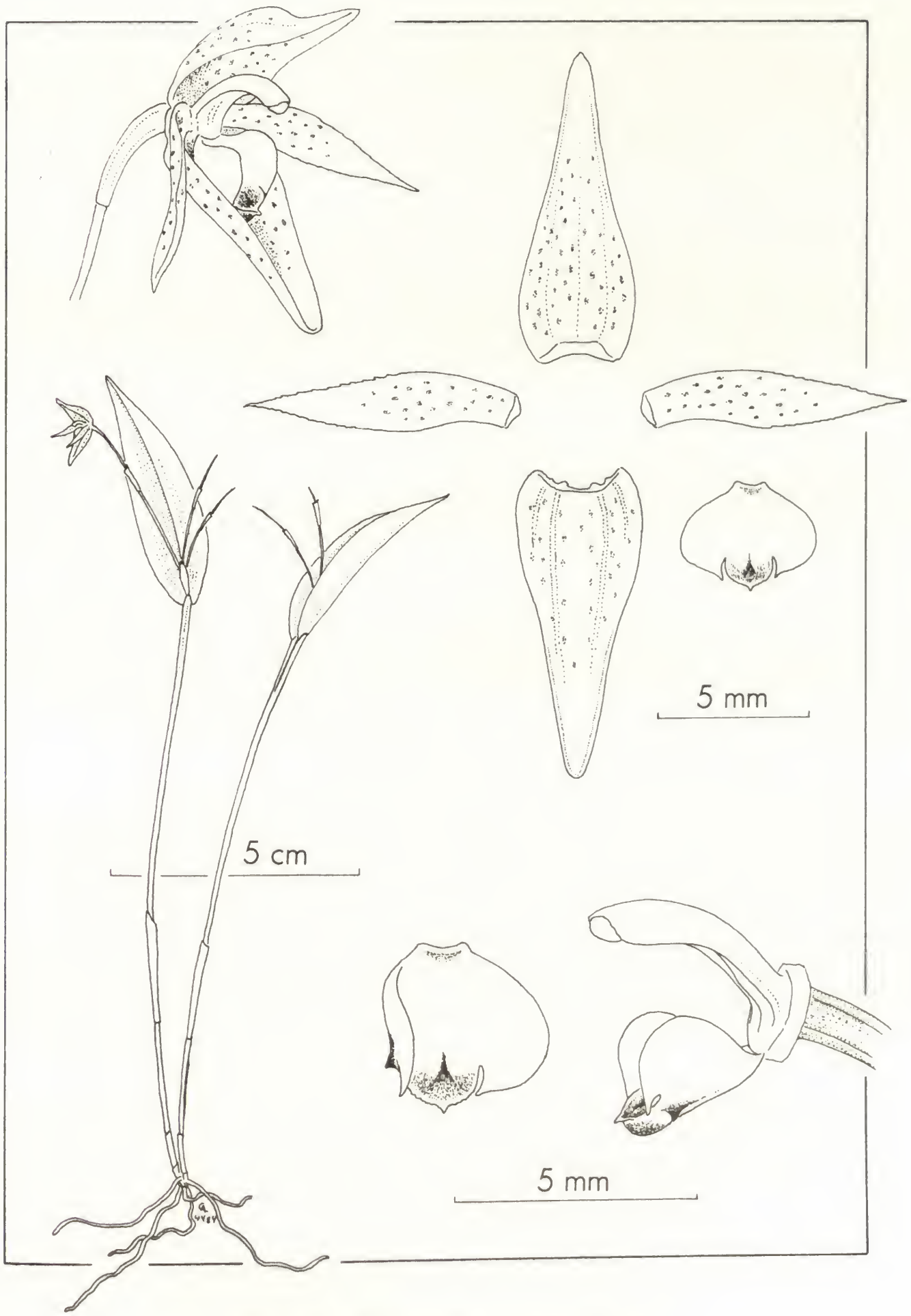


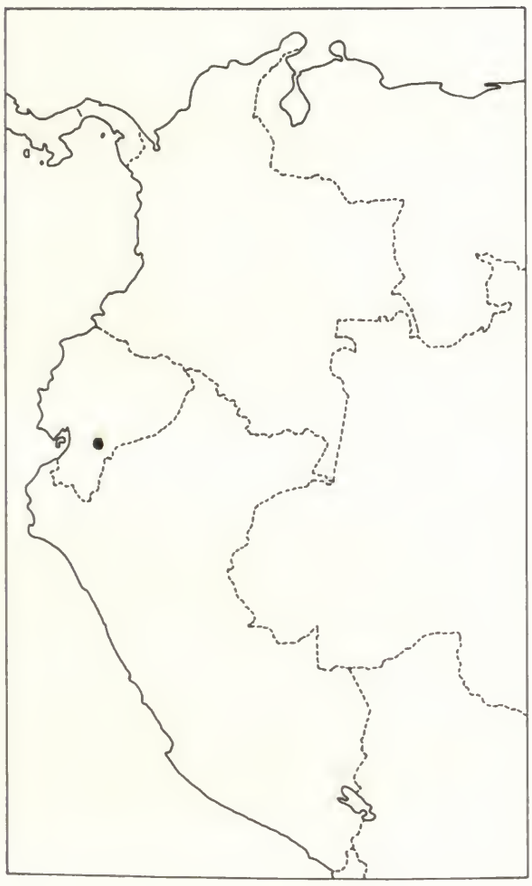
Plate 19. *Pleurothallis praecipua* Luer

Pleurothallis solium Luer, Selbyana 7: 123, 1982.

Ety.: From the Latin *solium*, "an armchair," referring to the appearance of the lip.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous above the middle, 7-14 cm long, 2 mm deep at the leaf, with 2-3 sheaths at the base. **Leaf** rigid, coriaceous, more or less spreading to suberect, ovate, acute, 3-4 cm long, 1.5-2 cm wide, the base rounded, subcordate, sessile. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 4-5 mm long at the base of the leaf; peduncle filiform, suberect, 10-15 mm long; floral bract 4 mm long; pedicel 7-10 mm long; ovary subcarinate, 3.5 mm long; **sepals** purple to dull yellow suffused with purple, subcarinate, fleshy, glabrous, the dorsal sepal elliptical, obtuse, concave, 6.5 mm long, 4 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, obtuse, 6.5 mm long, 4 mm wide; **petals** purple or yellow, fleshy, oblong-spathulate, 5.5 mm long, 2 mm wide below the apex, the apex thickened, subverrucose, acute; **lip** purple or yellow, fleshy, subquadrate-4-lobed, 2.5 mm long, 2 mm wide, the apex broadly cuneate or obtusely sub-bilobed with a shallow sinus, with erect, subacute lateral lobes near the middle, the disc concave medially, the base broadly truncate, attached to the base of the column; **column** stout, semiterete, 2 mm long, the anther and stigma subapical, the foot thick, obsolescent with the apex of the ovary.

ECUADOR: Prov. of Morona-Santiago: epiphytic in forest north of Gualaquiza, alt. 1200 m, 28 Feb. 1982, *C. Luer & A. Andreetta 7064* (Holotype: SEL); north of Gualaquiza, alt. 1800 m, 1 Feb. 1986, *S. Dalström & T. Höijer 1130* (MO).



This species is apparently endemic in southeastern Ecuador where it has been found on a few occasions. Vegetatively it is similar to the other members of the subgenus, but it is easily distinguished by the four-lobed, subquadrate lip that looks very much like a microscopic armchair.

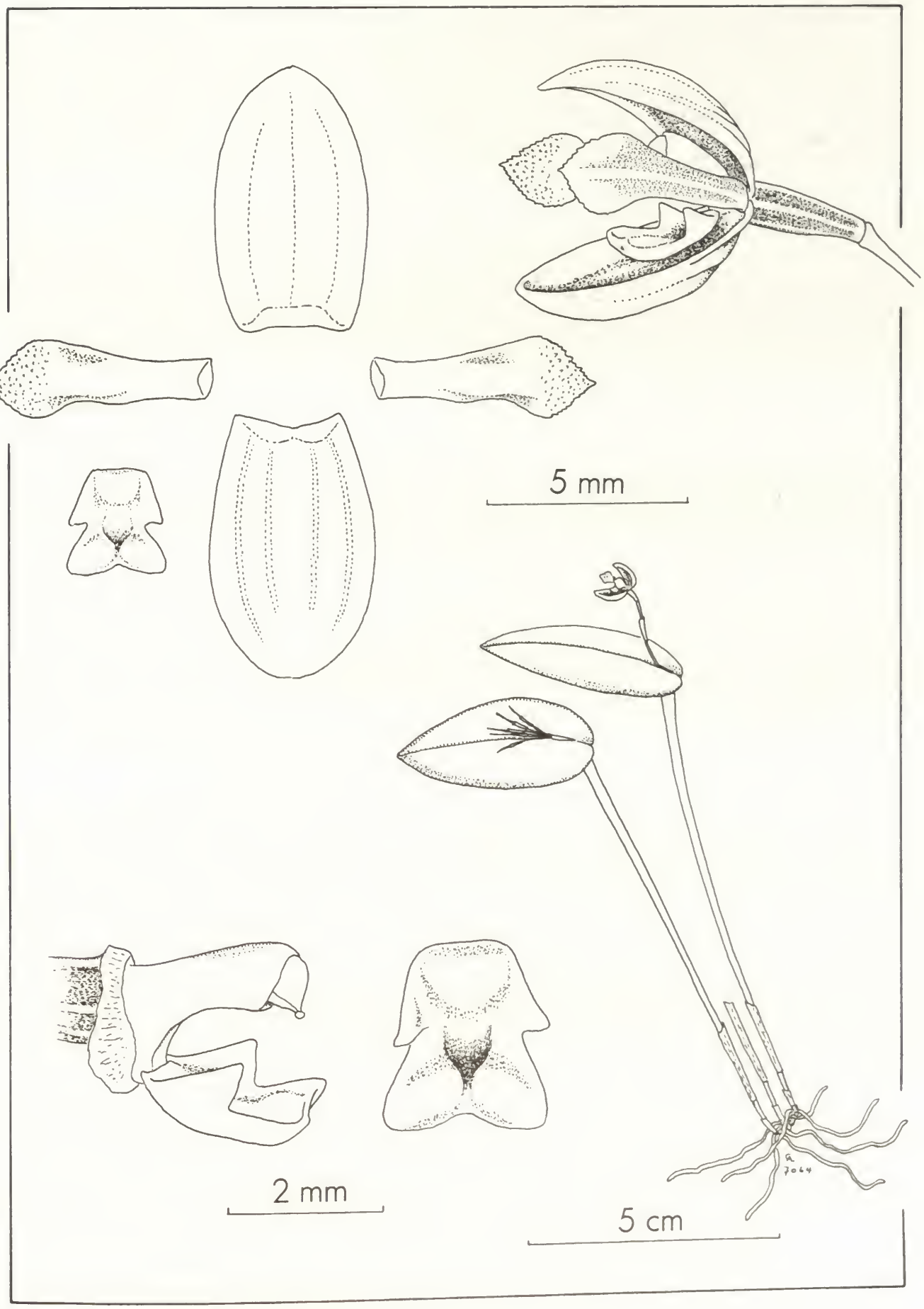


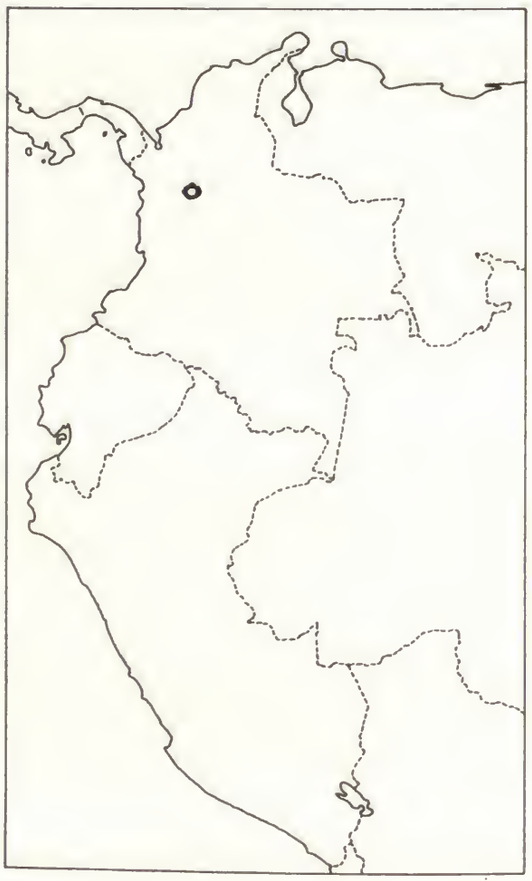
Plate 20. *Pleurothallis solium* Luer

Pleurothallis tetragona Luer & Escobar, Orquideología 14: 178, 1981.

Ety.: From the Greek *tetragonos*, "quadrangular," referring to the 4-edged ramicauls.

Plant small to medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply 4-angled above the base, 5-17 cm long, up to 3 mm deep at the leaf, with a tubular sheath above the base and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, elliptical, acute, 5-6.5 cm long, 2.8-3.8 cm wide, the base broadly cuneate to rounded, decurrent on the ramicaul for 10-15 mm. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 7-10 mm long above the base of the leaf; peduncle filiform, ascending to erect, 2.5-3 cm long; floral bract 7-9 mm long; pedicel 2-2.5 cm long; ovary 4 mm long; **sepals** yellowish white, glabrous externally, with purple, cellular spiculate-pubescence internally, the dorsal sepal ovate and concave in the lower quarter, narrowly linear above, acute, 15 mm long, 4 mm wide unexpanded, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 15 mm long, 4 mm wide unexpanded; **petals** yellowish white, covered by a red, cellular pubescence, suborbicular in the lower quarter, abruptly contracted above into a narrowly linear, subulate apex, 15 mm long, 3.75 mm wide in the lower portion; **lip** white, dotted with purple, pandurate-trilobed, 4 mm long, 1 mm wide, the apex acuminate, acute, the basal lobes small, erect, narrowly triangular, oblique, the base concave, truncate, broadly adherent to the base of the column; **column** white, stout, semiterete, 1 mm long, the anther and stigma subapical, the foot thick and pedestal-like with the apex of the ovary.

COLOMBIA: without locality or collector, cultivated by M. & O. Robledo at La Ceja, *R. Escobar 983* (Holotype: JAUM), flowered 16 Oct. 1977, *C. Luer 2057* (SEL).



This unique species is without known close relatives, but its affinity with the subgenus *Ancipitia* is without doubt. The greatest deviation from the usual vegetative pattern is the doubling of the margins of the laterally compressed ramicaul so that four, sharp edges are created. It is treated in a monotypic section. The inflorescence is compatible with the subgenus.

Apparently *P. tetragona* is endemic somewhere in Colombia. It is known from a single collection without collection data cultivated by Martha and Oscar Robledo at La Ceja. So far, it is not known to have been rediscovered.

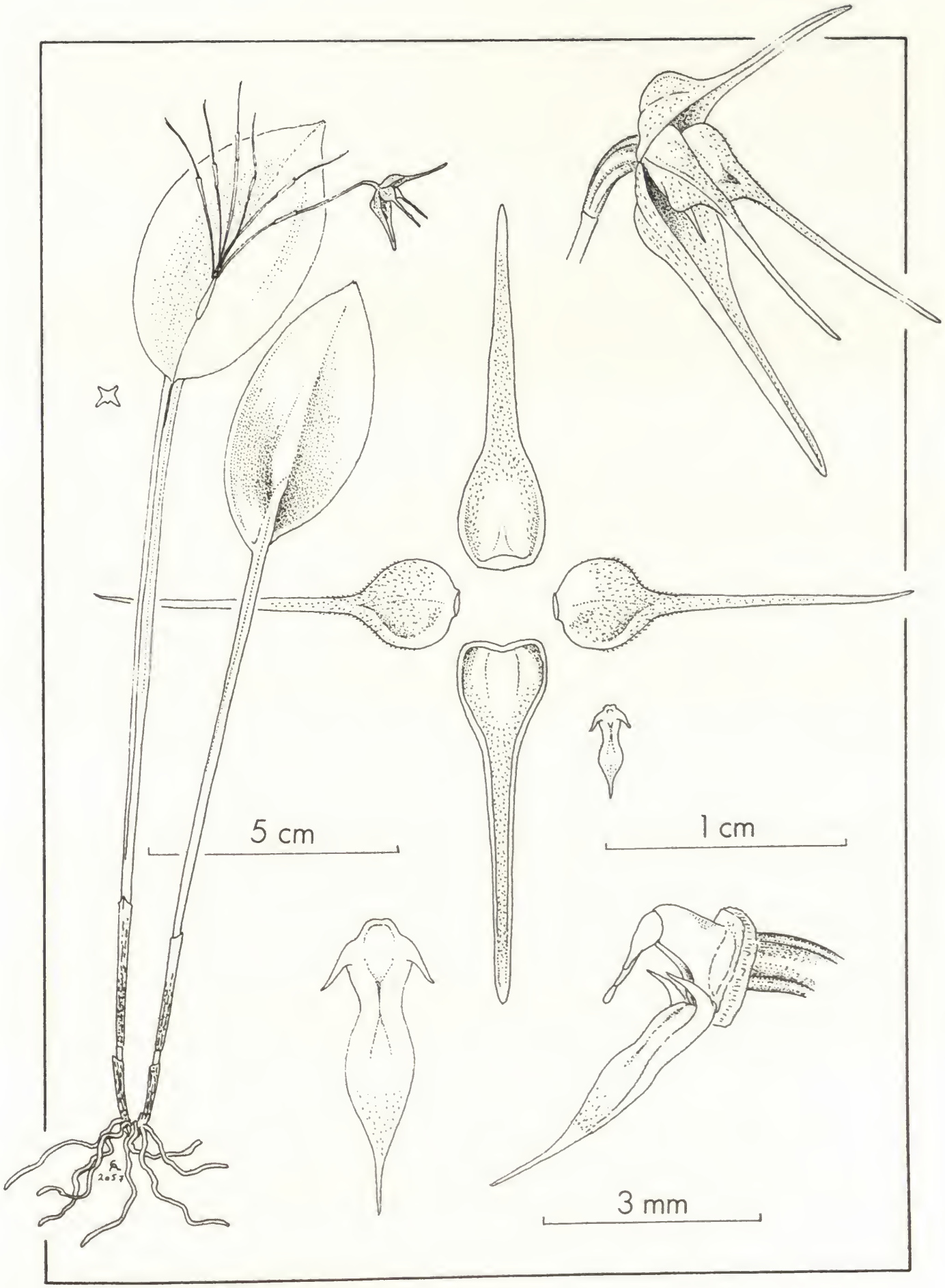


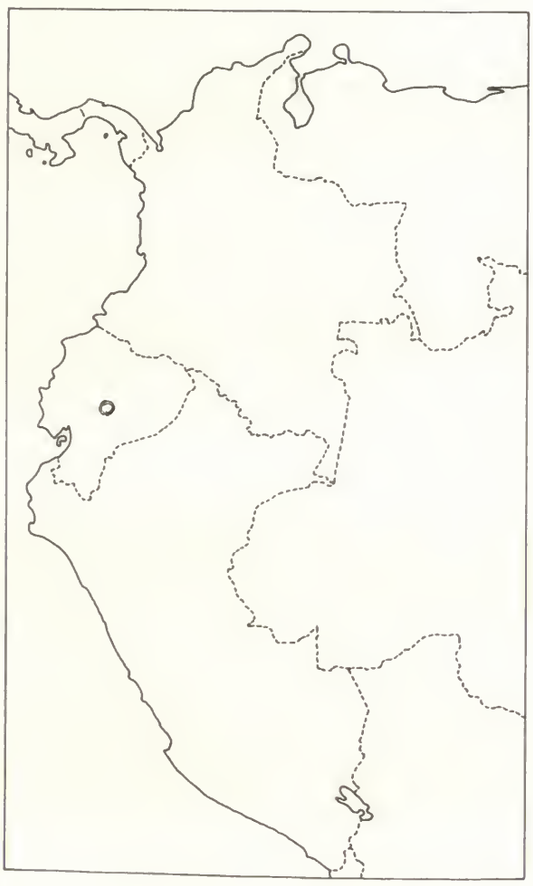
Plate 21. *Pleurothallis tetragona* Luer & Escobar

Pleurothallis viduata Luer, Phytologia 49: 221, 1981.

Ety.: From the Latin *viduatus*, "lost," referring to the missing collection data.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous above the middle, 7-18 cm long, 6 mm deep at the leaf, with a tubular sheath above the base and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, ovate, acute, carinate externally, 7-9 cm long, 3-4.5 cm wide, the more or less conduplicate base rounded, sessile, with the sides decurrent on the ramicaul for 8-20 mm. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5-6 m long, above the base of the leaf; peduncle filiform, erect, 2.5-3.5 cm long; floral bract 7-8 mm long; pedicel 4.5-5 cm long; ovary 3 mm long; **sepals** white, lightly marked with purple, fleshy, glabrous, concave, the dorsal sepal narrowly ovate, acute, 12 mm long, 5 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 11 mm long, 5.5 mm wide; **petals** white with an irregular patch of purple below the middle, cellular-glandular, narrowly ovate, oblique, acute, 9.5 mm long, 2.5 mm wide; **lip** dark red-purple, thick, suborbicular, 1 mm long, 1 mm wide, the rounded margins thickened, the disc with a thick, rounded, bilobed callus, the base subtruncate, hinged to the base of the column-foot; **column** white, mottled with rose, semiterete, 2 mm long, the anther and stigma subapical, the base of the column thickened with the apex of the ovary.

ECUADOR: without locality, cultivated at SEL, flowered in cultivation 12 Nov. 1980, *C. Luer 5596* (Holotype: SEL); flowered in cultivation by P. & A. Jesup in Bristol, CT., 12 Dec. 1988, *C. Luer 13797B* (MO).



This species was collected in Ecuador, probably at a relatively low altitude on the eastern slopes of the Andes between 1975 and 1977. Unfortunately, the identification tag with more specific locality data was lost.

The plant grows rapidly and it has been divided repeatedly. It flowers vigorously throughout the year. Vegetatively it is similar to other species of the subgenus, but it is easily identified the white flowers with a purple patch on the petals, and the tiny orbicular lip with a thick, rounded margin.

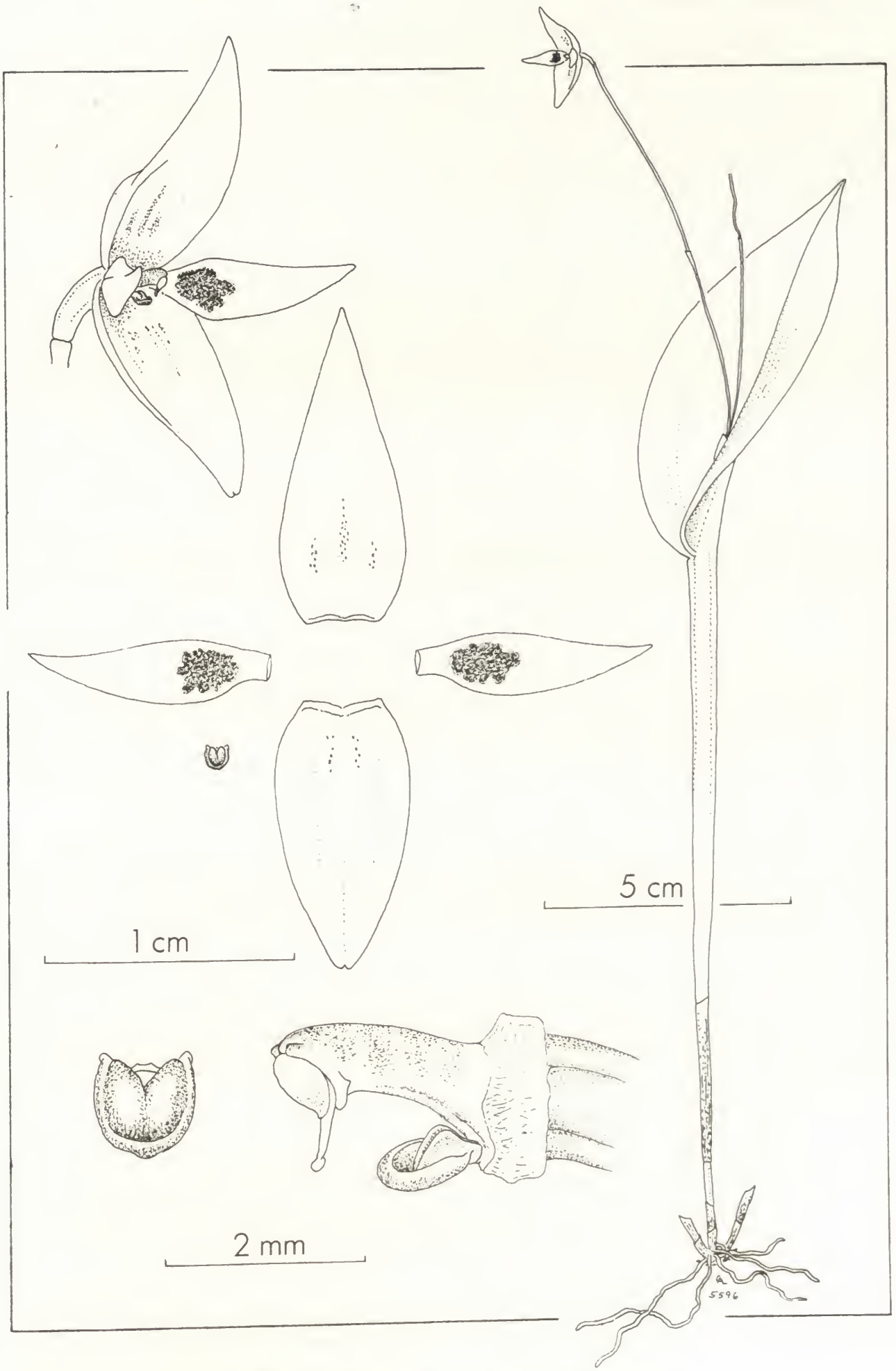


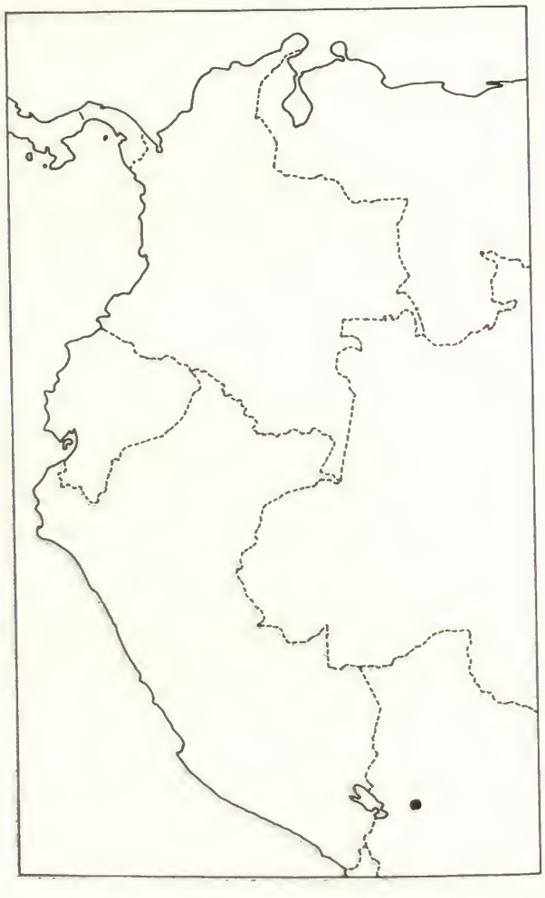
Plate 22. *Pleurothallis viduata* Luer

Pleurothallis vorator Luer & Vásquez, Phytologia 46: 374, 1980.

Ety.: From the Latin *vorator*, "a devourer," in allusion to the appearance of the column poised over the lip, as the head of an animal about to eat from a dish.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, sharply ancipitous above the base, 8-17 cm long, up to 4 mm deep at the leaf, with a tubular sheath below the middle and 2-3 sheaths at the base. **Leaf** rigid, coriaceous, erect, ovate, acute, carinate externally, 5.5-8 cm long, 2.5-3.5 cm wide, the base rounded, shallowly cordate, sessile, conduplicate. **Inflorescence** a fascicle of solitary, successive flowers borne from a reclining spathe 5-8 mm long at the base of the leaf; peduncle filiform, erect, 10-12 mm long; floral bract 6-8 mm long; pedicel 12-14 mm long; ovary subverrucose, 4 mm long; **sepals** yellow-orange, minutely flecked with red-purple, fleshy, the dorsal sepal narrowly ovate, concave below the middle, acute, 9 mm long, 3 mm wide, the lateral sepals completely connate into a synsepal similar to the dorsal sepal, 8.5 mm long, 4 mm wide; **petals** yellow, dotted with purple below the middle, fleshy, terete above the middle, narrowly linear-ovate, acute, 8 mm long, 1.3 mm wide; **lip** dull yellow to brown, mottled with purple, subquadrate, shallowly concave, 2 mm long, 2 mm wide, with a small, marginal, acute, retrorse tooth near the middle on both sides, the broadly obtuse apex with a pair of low calli externally, and with a discrete but shallow concavity just inside the central margin, the base truncate, with a pair of low, rounded calli, attached to the base of the column; **column** mottled with purple, arcuate, semiterete, 2.5 mm long, the anther large, subapical, the stigma ventral, the base thickened, pedestal-like with the apex of the ovary.

BOLIVIA: Dept. of La Paz: Prov. of Nor Yungas, epiphytic in forest between Chuspipata and Coroico, alt. 2800 m, 4 Feb. 1980, *C. Luer, J. Luer, R. Vásquez & R. Lara 5223* (Holotype: SEL); without locality, flowered in cultivation by Dino Menato in Chulumani, 1 Feb. 1980, *C. Luer 5046* (SEL).



This species is apparently endemic in the Yungas of Bolivia. The ovate leaf is conduplicate at the base. The gaping flowers are yellow-orange with a very small suborbicular, slightly concave lip beneath an arcuate column with a seemingly oversized anther.

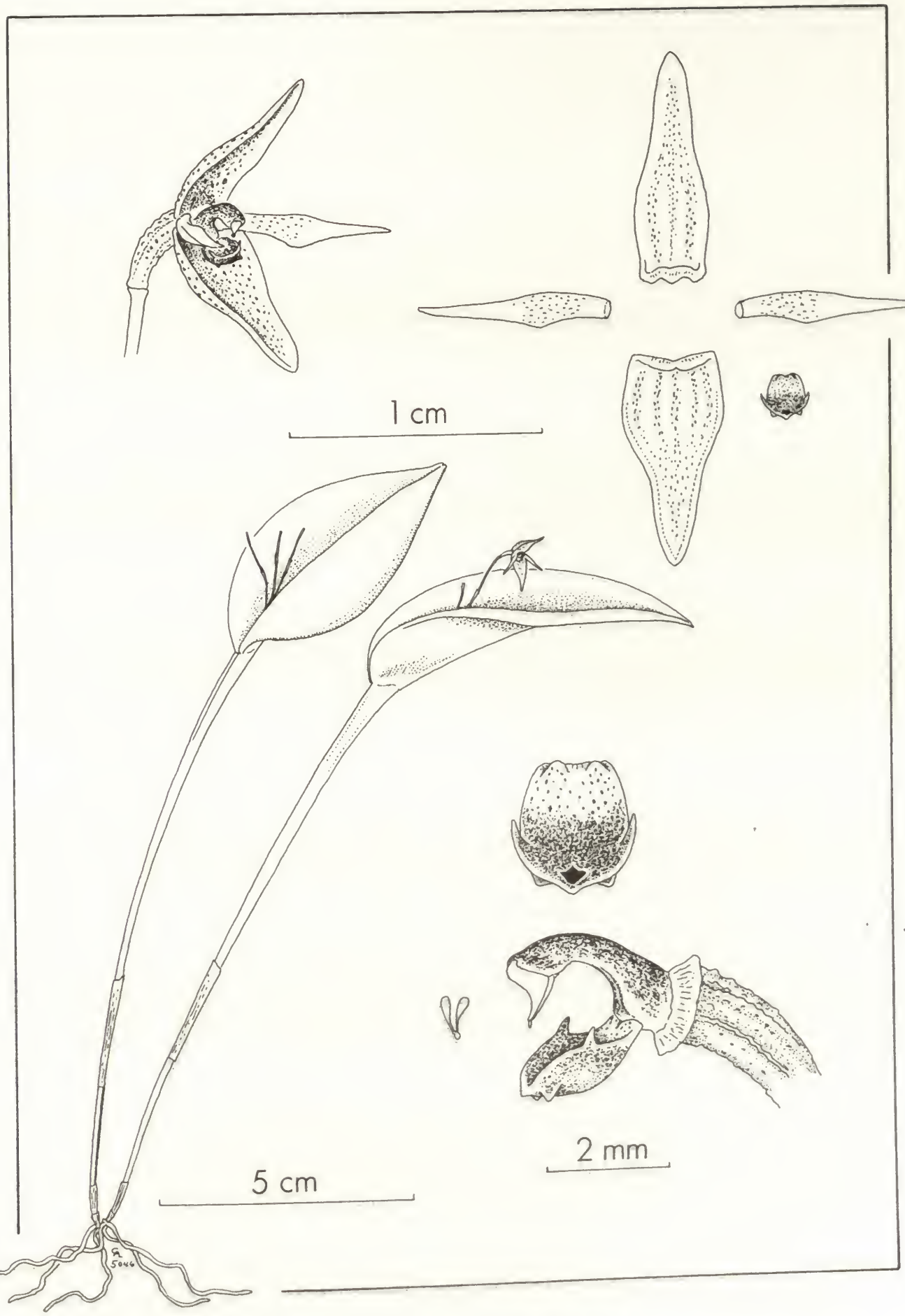


Plate 23. *Pleurothallis vorator* Luer & Vásquez

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BAUMANN, P. & K. BAUMANN, 1988. Das Geheimnis der Orchideen. Hofmann und Campe, Hamburg, 104, 118, 119, 132, 134.

LUER, C. A., 1986. Icones Pleurothallidinarum III. Systematics of *Pleurothallis*. Monogr. Syst. Bot. Missouri Bot. Gard. 20: 29.

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SYSTEMATICS OF THE SUBGENUS **SCOPULA** GENUS **PLEUROTHALLIS** (ORCHIDACEAE)

ABSTRACT

The subgenus *Scopula* Luer of the genus *Pleurothallis* R. Br. is defined. A key to the species is given. Each species is described and illustrated with a black and white drawing, and a distribution map is included for each.

New species:
Pleurothallis aspergillum Luer & Hirtz
Pleurothallis tetroxys Luer

Professor Reichenbach described the first species of *Pleurothallis* attributable to this subgenus in 1888. He chose the felicitous epithet *scoparum* for the resemblance of the tufted inflorescence at the tip of the leaf to a broom. In his description he indicated Lindley's section *Aggregatae*. At that time, this species with the brushlike fascicle of pedicels apparently emerging from the apex of the leaf was unique in *Pleurothallis*. Reichenbach had received specimens from the professional collector Eduard Klaboch who cited two collections (in 1875 and 1884) from different localities in Ecuador, and one from Consul Lehmann.

A personally penned letter including a watercolor painting to Reichenbach from F. C. Lehmann on stationery of the German Consulate in Popayán, Colombia, concerning this species as well as some other problems, is present in the Reichenbach herbarium at W (Vienna). A liberal translation by Fritz Hamer of the intriguing letter is as follows:

Popayán, 15 June 1888

Highly esteemed Sir:

On 31 December 1877, you called my attention to a *Pleurothallis* which produces flowers near the apex of the leaf, and of which I herewith enclose on the following page a facsimile of the outline you sent me at that time. I have tried to get information from Klaboch about the place of origin of that species, and during one of my numerous visits (to Ecuador) I searched that region with great patience, always with a negative result.

Today I allow myself to direct your attention to a species which, according to the marginal sketch (the watercolor painting) and the enclosed specimen, does not have the flowers near the apex but right at the apex. The plant grows on rocks which are periodically flooded at the foot of the Ecuadorian Western Cordillera, about 500 meters above sea level, 1000 meters lower than the one mentioned by Klaboch.*

Since I cannot believe that the same identity exists between the species of which you sent a sketch and my species, I therefore feel no moral obligation to make the plant which I found on my last trip to Ecuador known to you in the way I do today. However, my always cultivated indulgence obliges me to tell you about this one, because you called my attention to the existence of such a creation, whether the plant of Klaboch and mine are identical or not.# I specifically mention that I have not informed any of my orchid-collaborators of the existence of this species be it by letter or specimen, and shall not do so before my coming visit next spring. You therefore have time until the beginning of April - in case this species arouses your interest - to describe and publish it. After the time just mentioned, I shall render very detailed sketches as well as specimens to my collaborators and insist that the species be published immediately if you have not done so in the meantime.+

As you so evasively avoided my former requests to return the sketches I sent to you since 1880, I beg you today to hold in readiness the noted sketches and one specimen of each species - a right I have reserved in many of my letters directed to you!. I shall fetch them either personally on ny next voyage in April or through an authorized person.

On my next-to-last trip to Ecuador I have made many very enlightening discoveries which are especially important for the geographical distribution of orchids. I found on one of the upper tributaries of the Amazon in southern Ecuador *Odontoglossum vexillarium*, a variety with small, very intensely colored flowers. Also a *Masdevallia ephippium* and, judging from the plant, also *Odontoglossum wallisii* and many others. The most interesting is a small *Restrepia* with comparatively large, yellow and red maculated, long-pilose flowers. The leaves are also covered with a gray tomentum.^ The number of Masdevallias which seem to be new to me is seven.

On my last trip in October and November to Sittowal in Guayas I contracted a bad dysentery which kept me in bed for over a month, and nearly let me join the great number. It is only for a few days now that I can leave the bed and work a few hours daily at my desk.

Yours respectfully,

(signed) F. C. Lehmann

To Prof. Dr.
H. G. Reichenbach
Hamburg

*The plant does also grow at 1500 meters above sea level (3000-4000 feet).
#Lehmann was misled by an inaccurate sketch. Reichenbach's sketches of the flowers of both collections reveal that they are the same.
+Reichenbach did indeed publish this species as *Pleurothallis scoparum* before the year was out, but without mentioning Lehmann's collection. Reichenbach died that following spring on 6 May 1889.
^*Dresslerella hirsutissima* (C. Schweinf.) Luer.

A second species attributable to the subgenus *Scopula* did not come to the attention of an orchid taxonomist for a century until one was discovered in Colombia and described by Mariano Ospina H. in a new genus (*Colombiana*) in 1974. The third and fourth species from southern Colombia were added in 1980, and the fifth and sixth are added herewith.

The subgenus *Scopula* was proposed in 1986 to accommodate these peculiar species. Four of the six presently known species are found in Colombia, three of them sympatric in the vicinity of the La Planada Science Center in the southwesternmost department of Nariño. Two others are endemic in Ecuador. All are primarily epiphytic in wet forests of the western slopes of the Andes of Colombia and northern Ecuador at various altitudes between 750 and 2700 meters above sea level.

The six species of subgenus *Scopula* are easily recognized vegetatively by the elliptical or narrowly elliptical leaves with a tuft of single-flowered peduncles emerging near the apex of the leaf from the median sulcus opposite of what looks like the midrib on the dorsum. The leaves actually are exceedingly long-decurrent on the ramicaul. The free portion of the ramicaul below the leaf is terete and usually shorter than the leafy portion above. Neither annulus nor abscission layer is present. No leafless ramicauls occur with aging of the plant, all leaves apparently persisting and flowering continuously for years.

The inflorescence suggests some relationship with *Pleurothallis* subgenus *Ancipitia*: flowers produced in a fascicle of single-flowered peduncles, lateral sepals connate into a synsepal, petals large and often acute, a variously shaped lip, and a semiterete column with an apical or subapical anther and stigma, and an obsolescent foot. Vegetatively the sharply ancipitous ramicaul distinguishes subgenus *Ancipitia*.

Pleurothallis subgenus **Scopula** Luer, Icones Pleurothallidinarum III, Monogr. Syst. Bot. Missouri Bot. Gard. 15: 76, 1986.

Type: *Pleurothallis garayana* (Ospina) Luer, Selbyana 1: 90, 1975.

Ety.: From the Latin *scopula*, "a little broom," referring to the brushlike fascicle of peduncles near the apex of the leaf.

Syn.: *Colombiana* Ospina, Orquideología 8: 230, 1974.

Type: *Colombiana garayana* Ospina, Orquideología 8: 232, 1974 = *Pleurothallis garayana* (Ospina) Luer.

Ety.: Named for Colombia, the country of origin of the species.

Plants medium in size, epiphytic, caespitose; roots slender, fasciculate. Ramicauls slender, erect, terete, partially engulfed by the decurrent leaf, without an abscission layer or an annulus, the free portion below often shorter than the leafy portion above, with a tubular sheath below the middle and another one or two at the base. **Leaf** coriaceous, elliptical to narrowly elliptical, acute to subacute, the base long-decurrent on the ramicaul. **Inflorescence** a fascicle of successive, single-flowered peduncles emerging below the apex of the leaf, subtended by a small spathe; **sepals** membranous, the middle sepal uppermost, free from the laterals, the lateral sepals completely connate into a synsepal; **petals** of nearly similar size, more or less thickened, sometimes minutely ciliate; **lip** smaller than the sepals and petals, entire to fimbriate, 1-, 2-, or 3-lobed, the base delicately hinged or articulated to the column-foot; **column**, semiterete, the anther and rostellum apical to subapical, the pollinia 2, with small caudicles and viscidium, the stigma entire, apical to subapical, the base of the column united to the apex of the ovary without forming a foot, or sometimes forming a rudimentary foot.

KEY TO THE SPECIES OF SUBGENUS *SCOPULA*

1 Flowers widely spread, comparatively large, the sepals more than 6 mm long. 2
1' Flowers subglobose, comparatively small, the sepals less than 4 mm long 5

2 Lip ovate, coarsely fimbriate . . . . . *P. scoparum*
2' Lip not coarsely fimbriate 3

3 Lip transversely bilobed, the apex retuse. . . . . *P. garayana*
3' Lip not transversely bilobed. 4

4 Lip ovate, acute, obtusely angled below the middle . . . . . *P. aspergillum*
4' Lip cuneate, truncate. . . . . *P. tetroxys*

5 Leaf up to 1.5 cm wide; flowers purple; lip not lobed. . . . . *P. ruscaria*
5' Leaf usually 2-3 cm wide; flowers yellow; lip 3-lobed . . . . . *P. penicillata*

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Pleurothallis scoparum Rchb. f. . . . . Plate 5.
Pleurothallis tetroxys Luer . . . . . Plate 6.

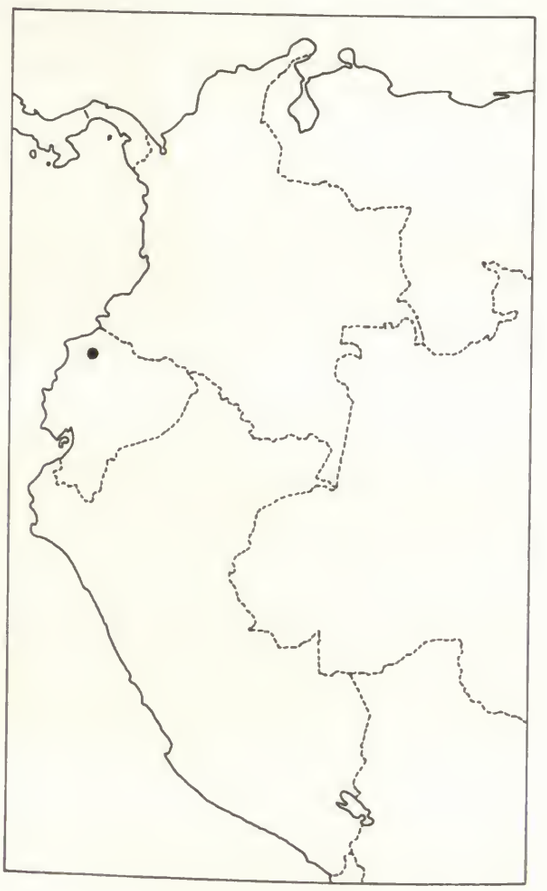
Pleurothallis aspergillum Luer & Hirtz, sp. nov.

Ety: From the Latin *aspergillum*, "a brush used for sprinkling," in allusion to the brushlike tuft of peduncles at the apex of the leaf.

Inter species subgeneris *Scopulae* Luer species haec petalis falcatis ciliatis et labello rhombiformi eroso subacuto distinguitur.

Plant medium in size, epiphytic, caespitose; roots densely fasciculate, slender. Ramicauls slender, erect, the free portion with a tubular sheath below the middle and 2 others at the base, 5-12 cm long to the base of the leaf. **Leaf** erect, coriaceous, narrowly elliptical-linear, acute, 8-15 cm long, 0.4-0.8 cm wide, the base narrowly cuneate, long-decurrent on the ramicaul. **Inflorescence** a fascicle of successive, single-flowered peduncles 9-12 mm long, 10-15 mm below the apex of the leaf, subtended by a spathe 5 mm long; floral bract 4 mm long; pedicel 8-12 mm long; ovary 2.5 mm long; **sepals** white, glabrous, the dorsal sepal ovate, concave, narrowly obtuse, 6.5 mm long, 3 mm wide unexpanded, the lateral sepals completely connate into an ovate, concave, acute synsepal 7 mm long, 4 mm wide unexpanded; **petals** thick, white, suffused with dark purple in the middle third, narrowly ovate-falcate, acute, finely ciliate, 6.5 mm long, 1.5 mm wide; **lip** white, orange at the base, ovate-rhomboid, concave, 2.5 mm long, 1.5 mm wide, the margins ciliate-erose, the apex acute, minutely apiculate, the subtruncate base hinged to an obsolescent column-foot; **column** white, semiterete, 2.5 mm long, the anther apical, exposed, the stigma apical, the base slightly bulbous, pubescent, essentially footless.

ECUADOR: Prov. of Esmeraldas: epiphytic in cloud forest west of Lita, alt. 750 m, 18 Jan. 1987, *C. Luer, J. Luer, C. H. Dodson, A. Hirtz, D. Benzing & D. Bermudes 12368* (Holotype: MO; Isotypes: K, QCNE); same area west of Lita, 18 Feb. 1989, *S. Dalström & T. Höijer 1255* (MO).



Pleurothallis aspergillum is locally abundant in the dense, wet forest of low altitudes in the northwestern Occidente of Ecuador, and is the second species of the subgenus to be found in Ecuador. It is distinguished from the other species of the subgenus by the white flowers with a dark purple band covering the middle third of the ciliate petals, and an ovate-rhomboid lip with minutely ciliate-erose margins.

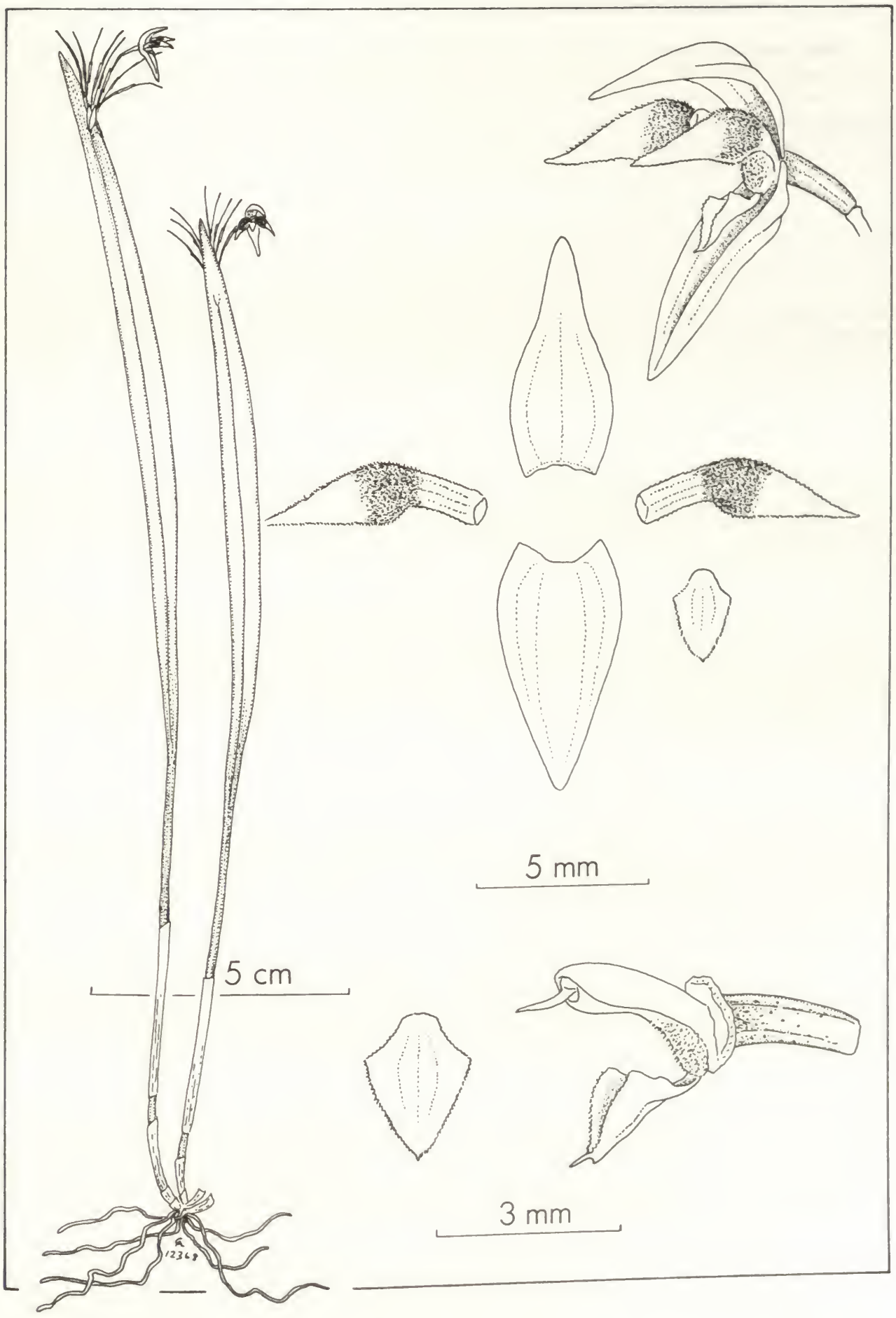


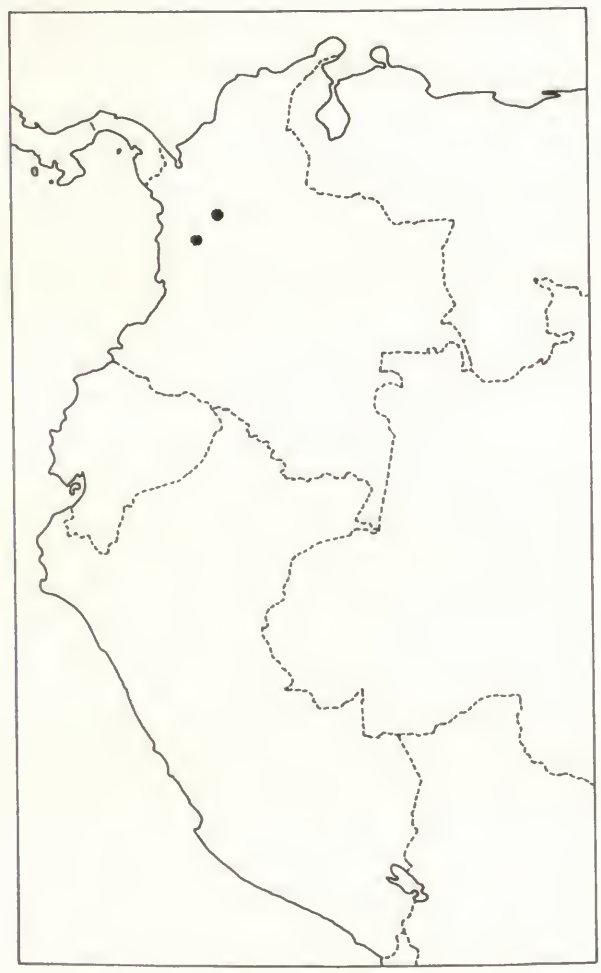
Plate 1. *Pleurothallis aspergillum* Luer & Hirtz

Pleurothallis garayana (Ospina) Luer, Selbyana 1: 90, 1975.

Ety: Named in honor of Leslie A. Garay, at that time curator of the AMES herbarium.
Syn.: *Colombiana garayana* Ospina, Orquideología 8: 232, 1974.

Plant medium in size, epiphytic, caespitose; roots densely fasciculate, slender. Ramicauls slender, erect, the free portion with a tubular sheath below the middle and 2 others at the base, 5-10 cm long to the base of the leaf. **Leaf** erect, coriaceous, narrowly elliptical-linear, acute, 8-18 cm long, 1-1.3 cm wide, the base narrowly cuneate, long-decurrent on the ramicaul. **Inflorescence** a fascicle of successive, single-flowered peduncles 5-9 mm long, 5-9 mm below the apex of the leaf, subtended by a spathe 5 mm long; floral bract 3-4 mm long; pedicel 5-8 mm long; ovary 3.5 mm long; **sepals** white, suffused with rose below the middle and with a few purple spots near the base, glabrous, the dorsal sepal ovate, concave, narrowed above the middle, obtuse, 9 mm long, 5 mm wide expanded, the lateral sepals completely connate into an ovate, concave, synsepal 9 mm long, 5.5 mm wide expanded, narrowed above the middle to the obtuse apex; **petals** thickened at the base, red-purple with flecks of darker purple, white at the apex, cellular-glandular, ovate, acute, 9 mm long, 3.25 mm wide; **lip** white, suffused with red-purple at the base, transversely bilobed, concave, 3 mm long, 4.5 mm wide expanded, the anterior margin microscopically-erose, the lateral lobes broadly rounded, the apex broadly retuse, the subtruncate base hinged to an obsolescent column-foot; **column** white, semiterete, 3 mm long, the anther and the stigma subapical, the base slightly bulbous, pubescent with red hairs, essentially footless.

COLOMBIA: Dept. of Antioquia: Quebrada "El Oro," alt. ca. 1800 m, *M. Ospina 752* (Holotype: herb. M. Ospina); same area, epiphytic along Río El Oro, alt. 2700 m, 1 May 1984, *C. Luer, J. Luer, R. Escobar & E. Valencia 10076* (MO). Dept. of Chocó: San José del Palmar, alt. 2000 m, purchased from a collector, flowered in cultivation at Colomborquídeas, 5 Mar. 1989, *C. Luer 14104* (MO).



Pleurothallis garayana was first found in the Western Cordillera of northern Colombia by Dr. Mariano Ospina H., of Bogotá. More recently it has been found in the Western Cordillera of central Colombia. It differs from the others in the subgenus by the broadly bilobed lip.

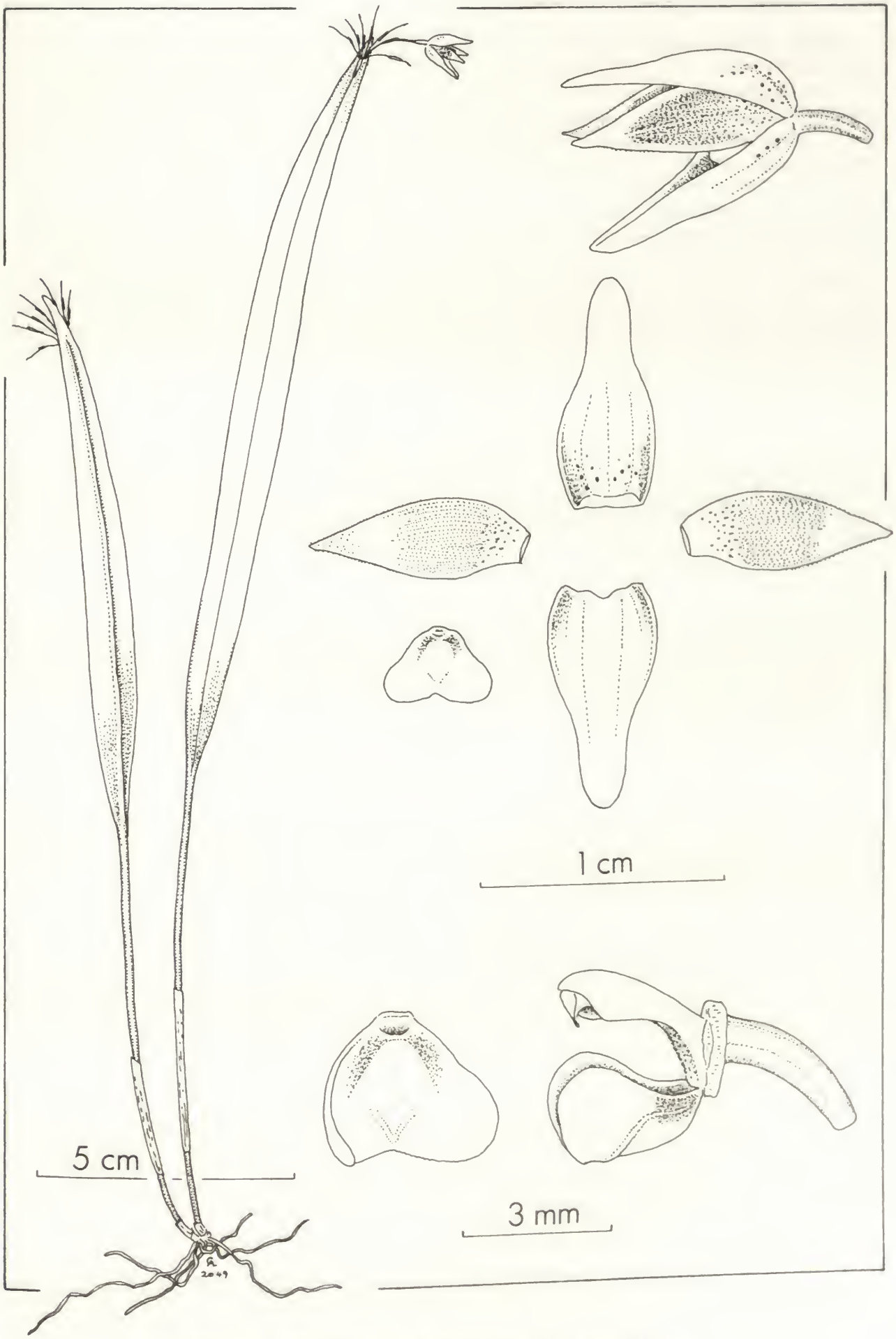


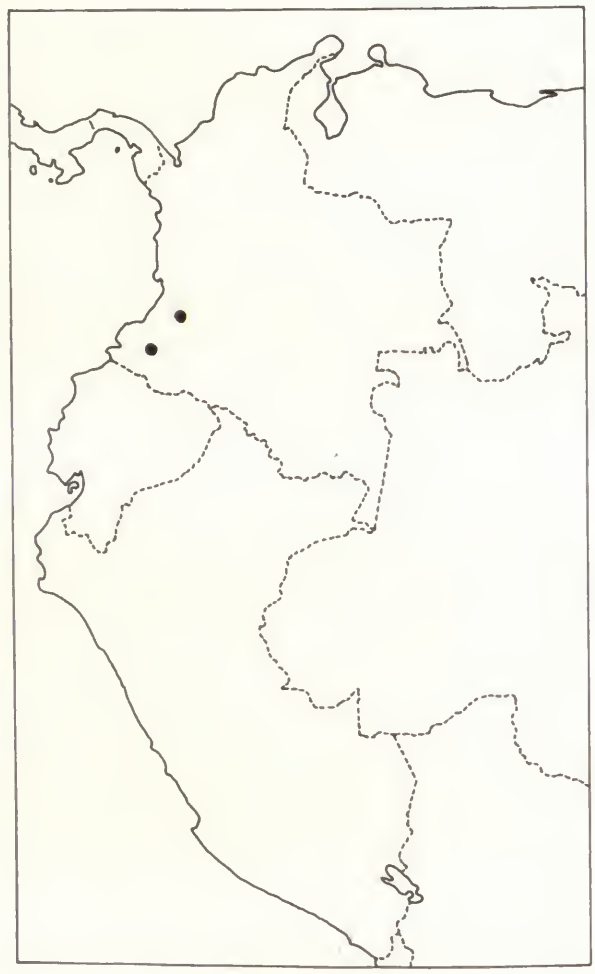
Plate 2. *Pleurothallis garayana* (Ospina) Luer

Pleurothallis penicillata Luer, Phytologia 47: 78, 1980.

Ety.: From the Latin *penicillatus*, "like a painter's brush," in allusion to the appearance of the fascicle of peduncles at the apex of the leaf.

Plant medium in size, epiphytic, caespitose; roots densely fasciculate, slender. Ramicauls slender, erect, with a tubular sheath below the middle and 2 others at the base, 7-19 cm long to the base of the leaf. **Leaf** erect, thinly coriaceous, elliptical, acute, lightly acuminate, 5-12 cm long, 2-3 cm wide, the base narrowly cuneate, long-decurrent on the ramicaul. **Inflorescence** a fascicle of successive, single-flowered peduncles 7-8 mm long, 5-10 mm below the apex of the leaf, subtended by a spathe 5 mm long; floral bract thin, 3-4 mm long; pedicel 11-16 mm long; ovary 2-3 mm long; flowers small, subglobose; **sepals** yellow, glabrous, the dorsal sepal ovate, concave, subacute, 3 mm long, 2.25 mm wide, the lateral sepals completely connate into an ovate, obtuse synsepal 3.5 mm long, 2.5 mm wide unexpanded, deeply concave below the middle producing an inflated mentum; **petals** slightly thickened, subcarinate externally, ovate, lightly constricted above the middle, the acute obtuse, apiculate, 3.5 mm long, 2 mm wide; **lip** yellow, 3-lobed, 1.3 mm long, 1 mm wide unexpanded, the middle lobe convex, lightly channeled, ovate-triangular, acute, the lateral lobes basal, oblique, subacute, the base subtruncate-concave, hinged to the base of the column; **column** light yellow, semiterete, essentially footless, 1 mm long, the anther and stigma subapical, exposed.

COLOMBIA: Dept. of Nariño: Munic. of Ricaurte, epiphytic in cloud forest north of Ricaurte, alt. 1600 m, 3 Nov. 1979, *C. Luer, J. Luer, A. Hirtz & K. Walter 4610* (Holotype: SEL); same area, cultivated at the La Planada Science Center, 25 Jan. 1987, *C. Luer 12486* (MO). Dept. of Valle de Cauca: Munic. of Chocó: Galapago, collected 27 Apr. 1983 by the Posadas et al., flowered in cultivation at Colomborquídeas, 5 Mar. 1989, *C. Luer 14105* (MO).



Pleurothallis penicillata occurs locally on the western slopes of the Andes of Colombia. It is distinguished from the other members of the subgenus by the broader leaves and the small, yellow, subglobose flowers. The synsepal is deeply inflated. The lip is three-lobed with the middle lobe convex and acute, and with the basal lobes oblique.

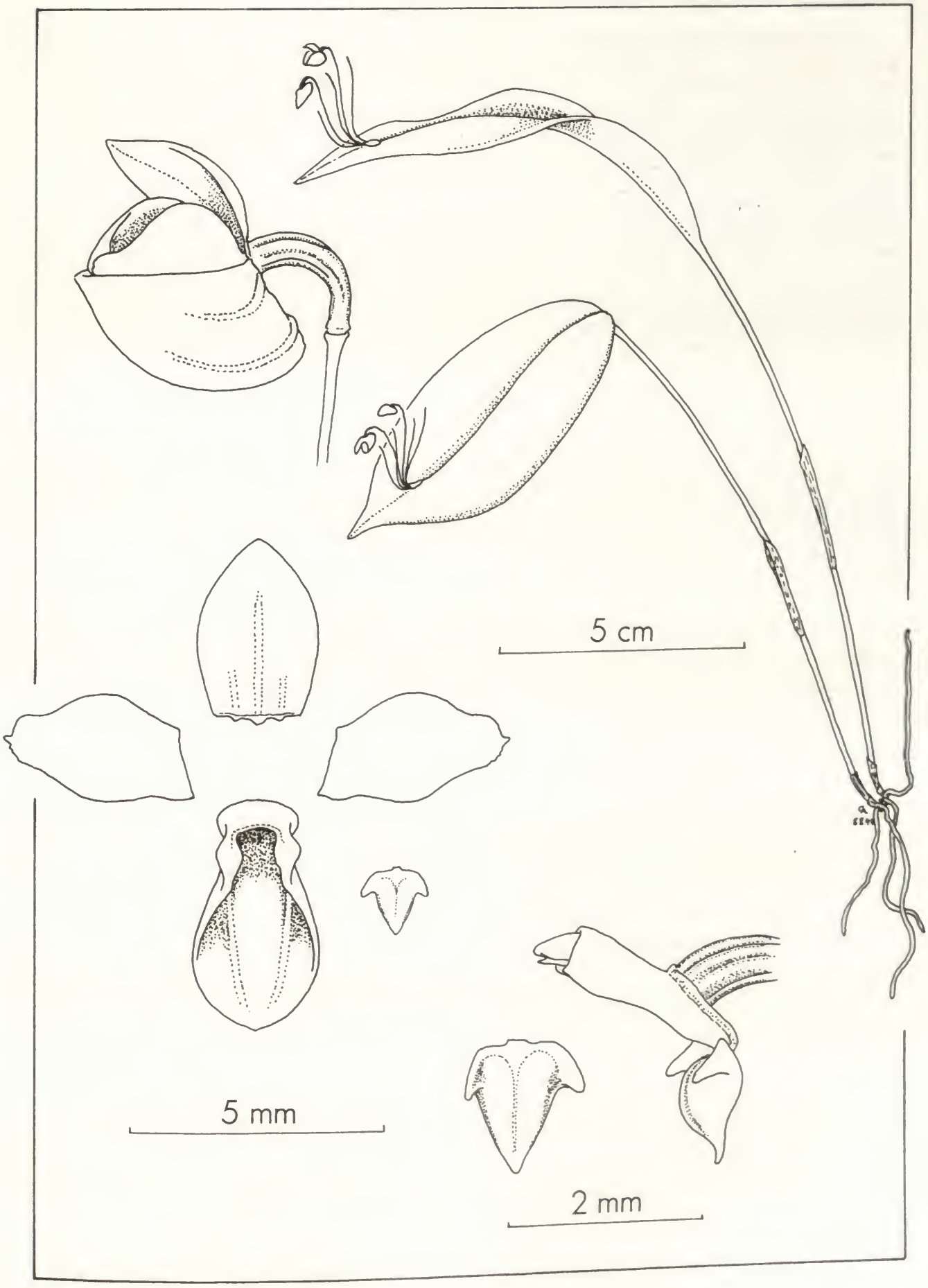


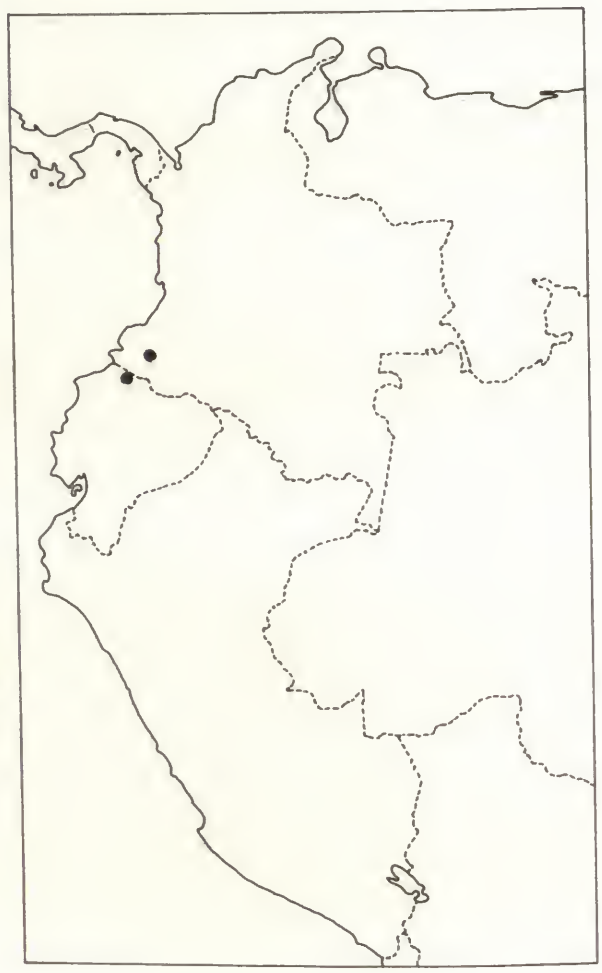
Plate 3. *Pleurothallis penicillata* Luer

Pleurothallis ruscaria Luer, Phytologia 47: 79, 1980.

Ety.: From the Latin *ruscarius*, "like a broom," (*ruscum*, a shrub from which brooms were made) referring to the tufted inflorescences.

Plant medium in size, epiphytic, caespitose; roots densely fasciculate, slender. Ramicauls slender, erect, with a tubular sheath below the middle and 2 others at the base, 7-16 cm long to the base of the leaf. **Leaf** erect, thinly coriaceous, narrowly elliptical, acute, 7-10 cm long, 1-1.5 cm wide, the base narrowly cuneate, long-decurrent on the ramicaul. **Inflorescence** a fascicle of successive, single-flowered peduncles 2.5-4 mm long, 1-2.5 cm below the apex of the leaf, subtended by a fugacious spathe 5 mm long; floral bract 4-5 mm long; pedicel 5-7 mm long; ovary 1.75 mm long; flowers small, subglobose; **sepals** purple, glabrous, the dorsal sepal broadly ovate, concave, obtuse, 3.5-4.5 mm long, 3.5-4 mm wide expanded, the lateral sepals completely connate into a broadly ovate, concave, obtuse synsepal 3.5-4.5 mm long, 2.75-3.75 mm wide; **petals** purple, oblong-obovate, curved, acute, subcarinate, glabrous, minutely erose above the middle, 3.75-4.5 mm long, 1.5-1.75 mm wide; **lip** purple, entire, obovate, concave, 2.5 mm long, 1.5 mm wide, the apex subtruncate, erose, apiculate, the base thickened, hinged to the base of the column; **column** purple, stout, semiterete, footless, 1 mm long, the anther and stigma subapical, exposed.

COLOMBIA: Dept. of Nariño: Munic. of Ricaurte: epiphytic in cloud forest above Ricaurte, alt. 1600 m, 3 Nov. 1979, *C. Luer, J. Luer, A. Hirtz & K. Walter 4611* (Holotype: SEL); same area, cultivated at the La Planada Science Center, 25 Jan. 1987, *C. Luer 12498* (MO).
ECUADOR: Prov. of Carchi: wet forest east of Maldonado, alt. 1800 m, 17 Feb. 1989, *S. Dalström & T. Höijer 1254* (MO).



Pleurothallis ruscaria is apparently endemic in southwesternmost Colombia and neighboring Ecuador. It is distinguished from the other members of the subgenus by the tufted inflorescence often farther (about 2 cm) from the apex of the leaf, and the small, purple, subglobose flowers. The dorsal sepal and the synsepal are similar, ovate and concave, the petals are erose and acute; and lip is concave and apiculate.

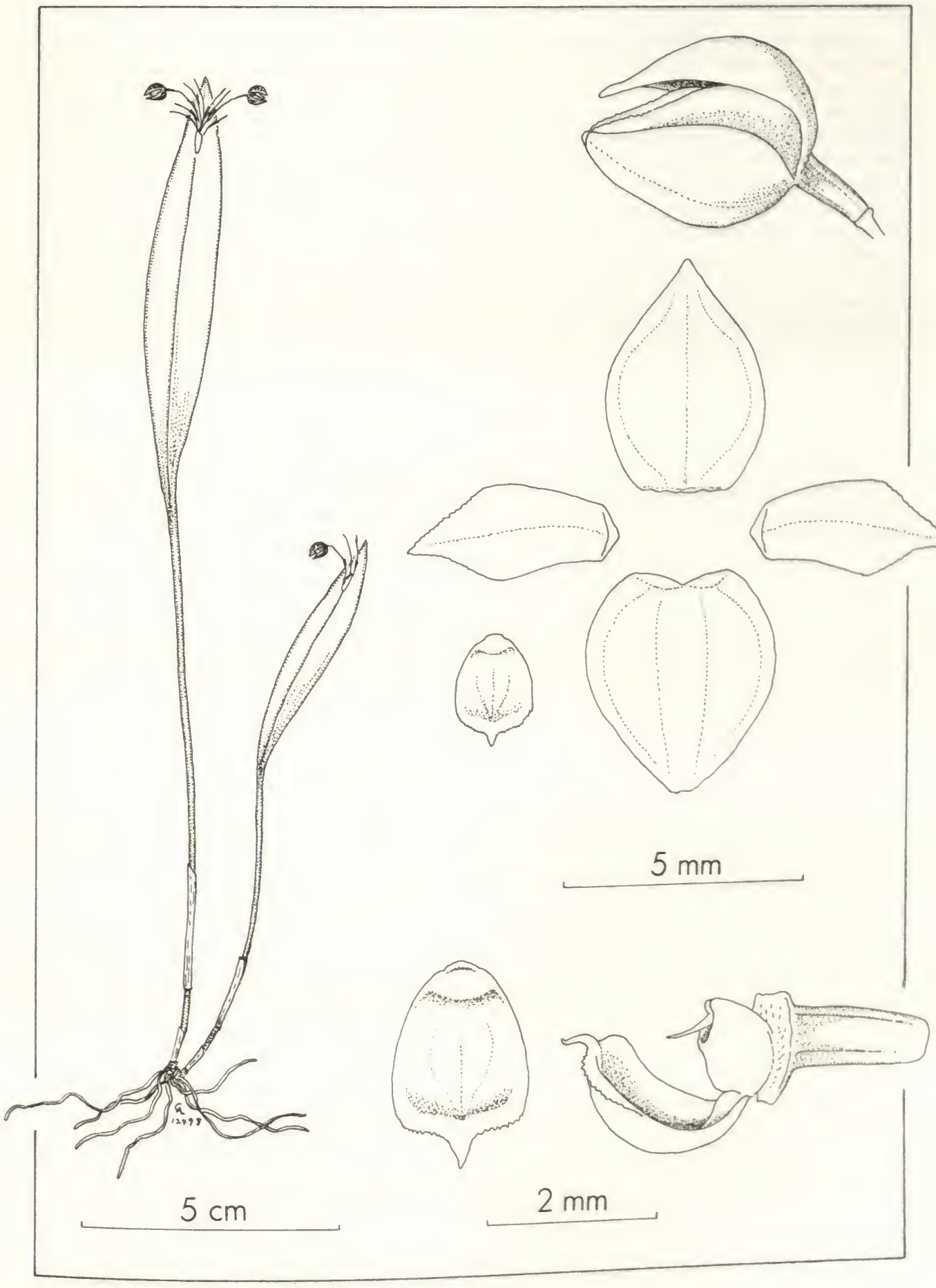


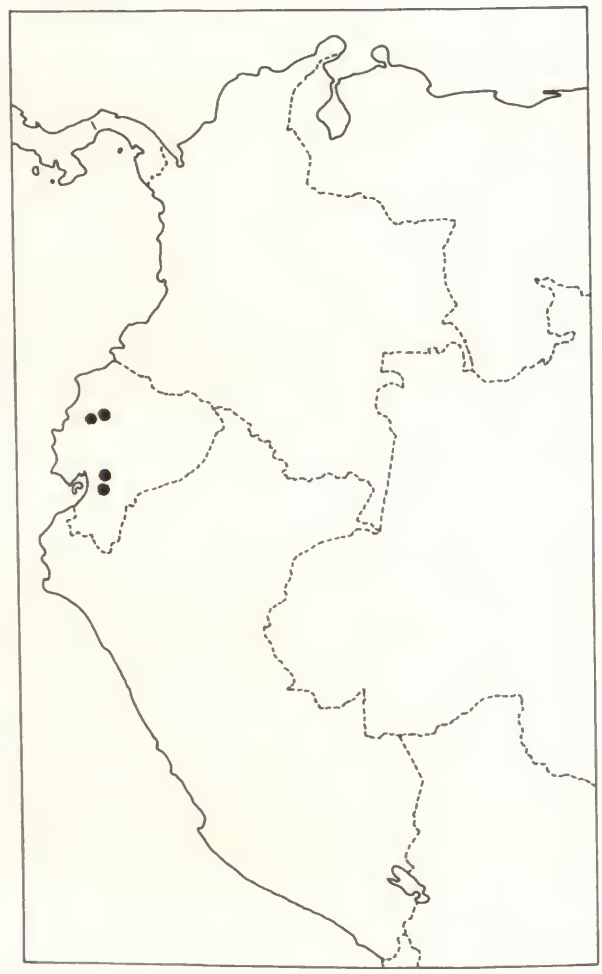
Plate 4. *Pleurothallis ruscaria* Luer

Pleurothallis scoparum Rchb. f., Flora 71: 153, 1888.

Ety.: From the Latin *scoparum*, "of brooms," referring to the dense fascicle of peduncles at the apex of the leaf.

Plant medium in size, epiphytic, caespitose; roots very slender, numerous, densely fasciculate. Ramicauls slender, erect, 5-19 cm long, with a tubular sheath above the base and another at the base. **Leaf** erect, coriaceous, narrowly elliptical, acute, 7-16 cm long, 0.8-2 cm wide, the base narrowly cuneate, long-decurrent on the ramicaul. **Inflorescence** a fascicle of successive, single-flowered peduncles 5-8 mm long, 3-5 mm below the apex of the leaf, subtended by a fugacious spathe 2-3 mm long; floral bract 4-5 mm long; pedicel 7-12 mm long; ovary 3 mm long; **sepals** white to rose, dotted with purple, glabrous, the dorsal sepal ovate, concave below the middle, 8-9 mm long, 3 mm wide, narrowed near the middle to an acute apex, the lateral sepals completely connate into an ovate, concave, narrowly obtuse synsepal, 7-9 mm long, 3 mm wide; **petals** rose, dotted with purple, elliptical below the middle, 7-8 mm long, 2 mm wide, narrowed above the middle into a thickened, subulate apex, the margins minutely ciliate; **lip** white, ovate, acute, 2.5 mm long, 2 mm wide, with a dark purple, central, cellular-glandular callus, the margins fimbriate, the base truncate, hinged to the base of the column; **column** purple, semiterete, 1.25 mm long, the base pedestal-like with the apex of the column, the anther and stigma apical.

ECUADOR: Prov. of Azuay: near Naranjal, alt. 3000 ft., 1875, *E. Klaboch s.n.* (Holotype: W); Prov. of El Oro: near Santa Rosa, alt. 3-4000 ft., 1884, *E. Klaboch s.n.* (W). Prov. of Pichincha: west Andes, alt. ca. 500 m, *F. C. Lehmann s.n.* (W); terrestrial on the road embankment between Quito and Santo Domingo, alt. 1600 m, 2 Feb. 1963, *C. H. Dodson & L. B. Thien 2218* (MO, SEL); road to Malatos between Chiriboga and Santo Domingo, alt. 1300 m, Jan. 1989, *A. Hirtz 3961B* (MO), C. Luer illustr. 14366.



Only one specimen consisting of one leaf and the stem is present on Reichenbach's herbarium sheet of the type-specimen at W (Vienna), and two separate collections by Eduard Klaboch are noted. The first mentioned locality is given as the holotype above. Reichenbach's drawing of the floral parts is dated 1885, but since that date is later than either of the localities given, it is of no help in determining from which locality the type-specimen was obtained. A second drawing dated 1888 on the same sheet is from the later collection by Consul Lehmann.

Apparently this species is distributed locally on the western slopes of the Andes of central Ecuador at altitudes between 500 and 1600 meters above sea level. It is vegetatively similar to the other five species of the subgenus, but it is readily distinguished by the pink-spotted flowers with a shaggy-fimbriate lip.

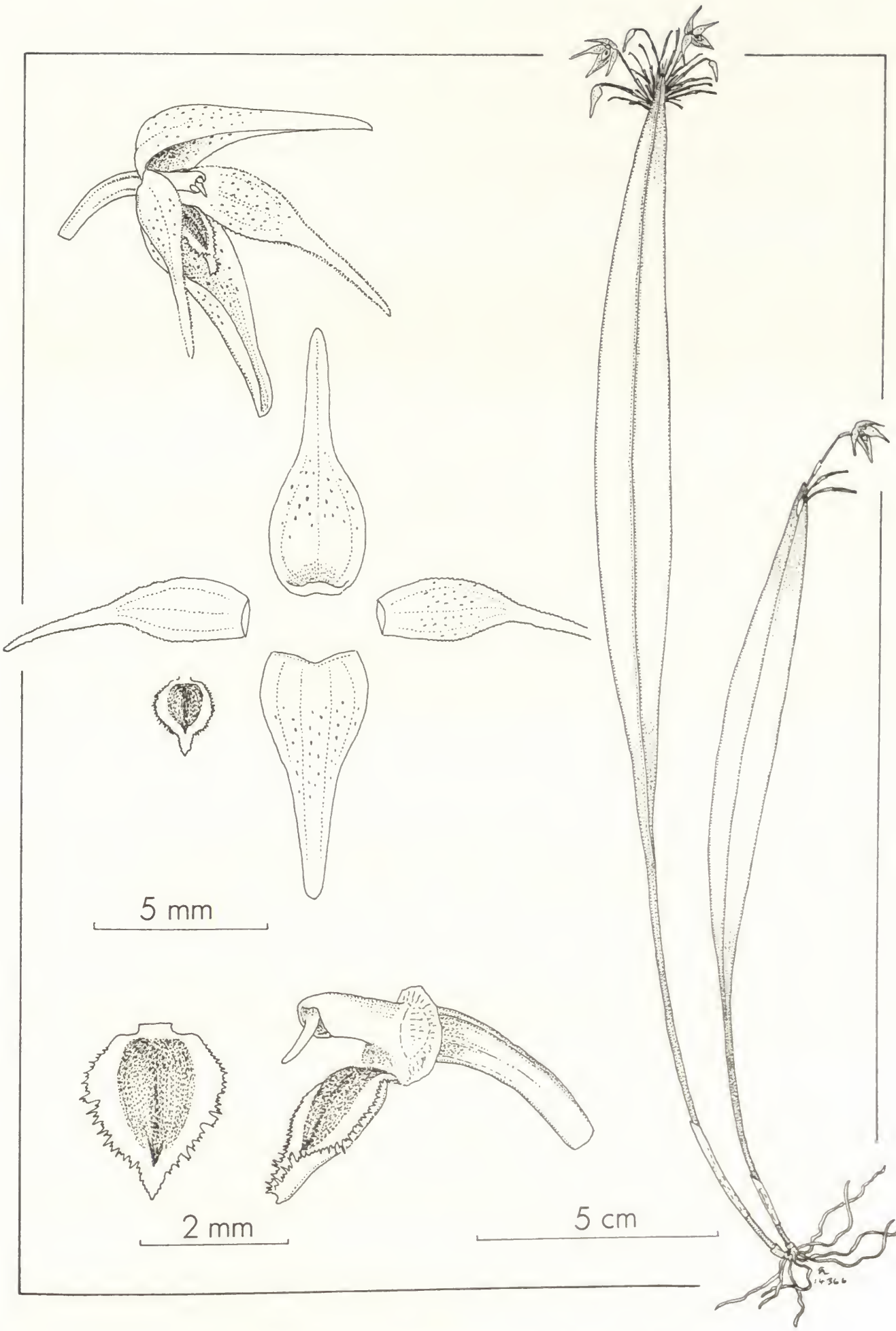


Plate 5. *Pleurothallis scoparum* Rchb. f.

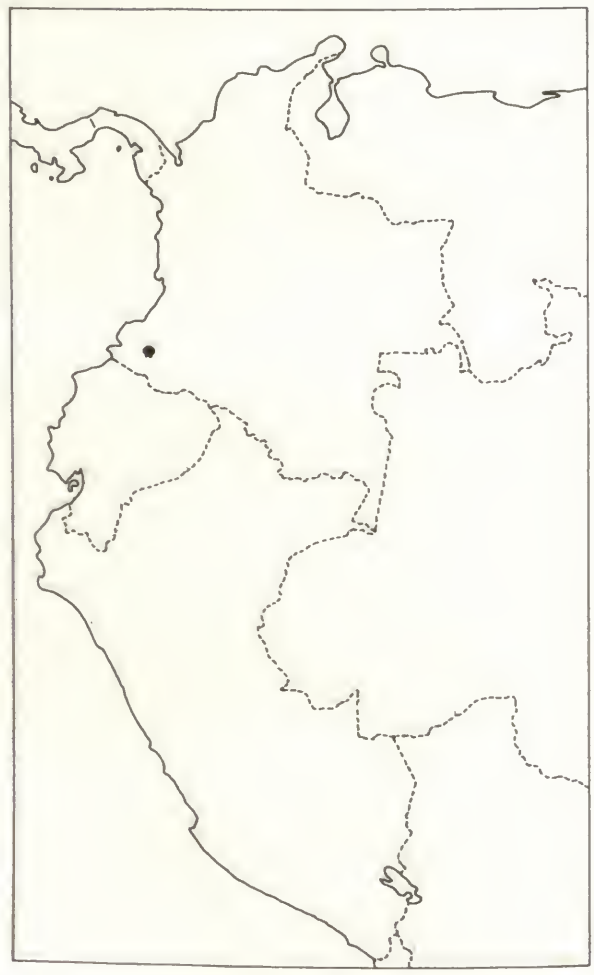
Pleurothallis tetroxys Luer, sp. nov.

Ety.: From the Greek *tetroxys*, "with four sharp points," referring to the narrow, pointed sepals and petals.

Inter species subgeneris *Scopulae* Luer species haec petalis subulatis, glandulosis et labello cuneato concavo apice truncato eroso distinguitur.

Plant medium in size, epiphytic, caespitose; roots densely fasciculate, slender. Ramicauls slender, erect, with a tubular sheath below the middle and 2 others at the base, 5-8 cm long to the base of the leaf. **Leaf** erect, coriaceous, narrowly elliptical-linear, acute, 8-13 cm long, 0.7-1 cm wide, the base narrowly cuneate, indistinctly petiolate, long-decurrent on the ramicaul. **Inflorescence** a fascicle of successive, single-flowered peduncles 5-8 mm long, 10-15 mm below the apex of the leaf, subtended by a spathe 5 mm long; floral bract 4-5 mm long; pedicel 6-10 mm long; ovary 3 mm long; **sepals** and petals red-brown with the apices yellow, the dorsal sepal elliptical and concave below the middle, narrowly linear and obtuse above the middle, 12 mm long, 4 mm wide unexpanded, the lateral sepals completely connate into an ovate synsepal 11.5 mm long, 5 mm wide unexpanded, concave below the middle, acuminate and narrowly obtuse above the middle; **petals** elliptical below the middle, glandular cellular-pubescent, with 3 darker veins, 11 mm long, 2.5 mm wide, the acute apex long-attenuate; **lip** brown, darker brown centrally, oblong-cuneate, concave, 4 mm long, 2 mm wide, the truncate apex erose, the base rounded and concave to articulate with the bulbous base of the column; **column** cream, semiterete, 3 mm long, the anther subapical, exposed, the stigma subapical, the under surface of the column pubescent, bulbous at the base, essentially footless.

COLOMBIA: Dept. of Nariño: Munic. of Ricaurte: collected near La Planada, alt ca. 1800 m, flowered in cultivation at the Orquideario by J. Orejuela, 25 Jan. 1987, *C. Luer 12497* (Holotype: MO).



Pleurothallis tetroxys is one of three species of the subgenus that are sympatric in the wet forest of southwestern Colombia in the vicinity of the La Planada Science Center. The other two species, *P. penicillata* and *P. riscaria* were discovered in the same area in 1979.

This species is distinguished from the others of the subgenus by the brown flowers with acuminate, yellow apices of the sepals and petals. The lip is cuneate with a thin, erose, truncate, apical margin. The base is concave to accommodate the bulbous base of the essentially footless column. The "ball and socket" articulation is reminiscent of that seen in the genus *Barbosella* Schltr.

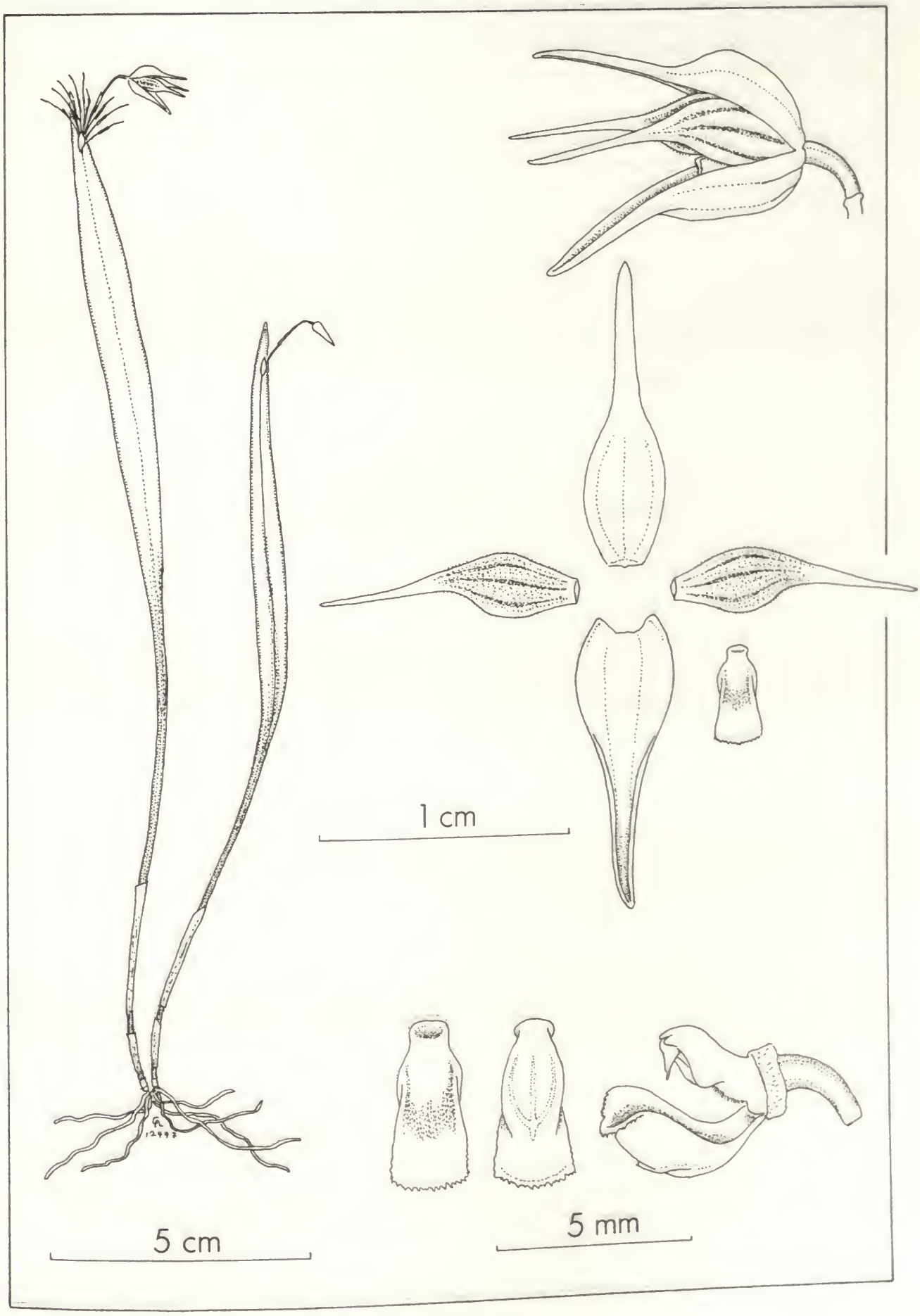


Plate 6. *Pleurothallis tetroxys* Luer

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OSPINA, M., 1974. *Colombiana*: un nuevo género en la subtribu Pleurothallideae. Orquideología 8: 229-232.

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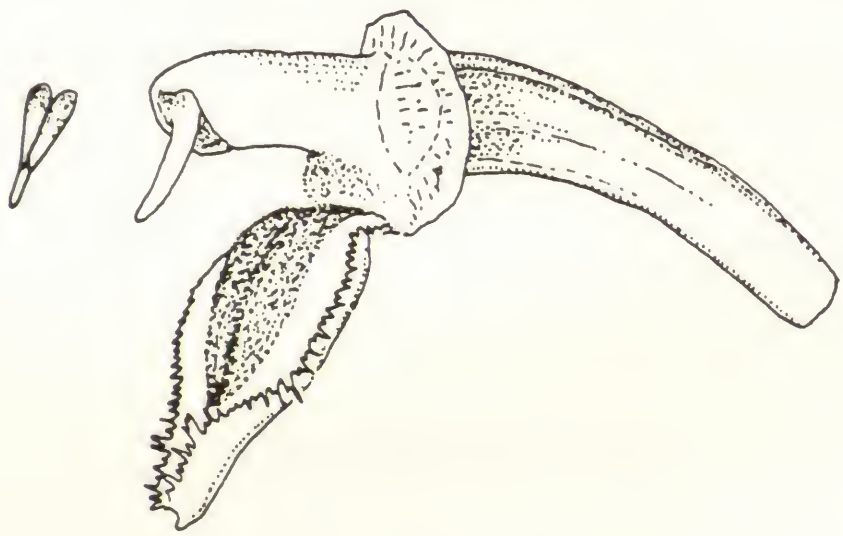

SYSTEMATICS OF THE GENUS *TRISETELLA* (ORCHIDACEAE)

ABSTRACT

A history of *Trisetella* Luer is given and the genus is described. A key to the sections and species is given. Each species is described and illustrated with a black and white drawing. The specimens cited in the distributions are only a few for the more frequent species from various localities. A distribution map is included for each species.

New taxa:
Trisetella sect. **Fissura** Luer, sect. nov.
Trisetella sect. **Trisetella**
Trisetella subsect. **Calvicaulis** Luer, sect. nov.
Trisetella subsect. **Trisetella**
Trisetella cordeliae Luer, sp. nov.
Trisetella fissidens Luer & Hirtz, sp. nov.
Trisetella nodulifera Luer & Hirtz, sp. nov.
Trisetella sororia Luer & Andreetta, sp. nov.
Trisetella strumosa Luer & Andreetta, sp. nov.

The first species of this genus known to botanical science was described by Reichenbach in 1876 as *Masdevallia triaristella*. Recognizing this "little curiosity," as he described it, as something very different from the other species of the genus *Masdevallia*, he immediately indicated a new subdivision, *Triaristellae*, stopping short of erecting a new genus. All subsequent authors were satisfied to follow his decision until 1978, even though generic differences existed.

In 1876, the genus *Masdevallia* was in great demand among hobbyists and horticulturists. Reichenbach added his *M. triaristella* to the growing list of the immensely popular species probably because of the habit of the plant with short ramicauls, and the flowers with sepaline tails, there being no other genus then in existence to accommodate it.

Reichenbach described a total of five species of the genus in *Masdevallia*. The species are so distinctive that Kränzlin recognized all of them in the section *Triaristellae* in his monograph on *Masdevallia* in 1925, but he also included a species of *Barbosella* Schltr. Later Schlechter and Schweinfurth each added another epithet to *Masdevallia* for species of *Trisetella*.

The section *Triaristellae* of *Masdevallia* was first recognized as a genus by Brieger in 1976, but the chosen name *Triaristella* was already occupied by a fossil spore. The name *Trisetella* was substituted in 1980.

The species of the genus are closely allied, all seemingly derived from one frequent, variable and widely distributed species-complex recognized here as *Trisetella triglochin*. This species-complex is found throughout the range of the genus from Central America through the Andes and the lower altitudes of Amazonian Venezuela, Brazil, and Bolivia.

Within the *T. triglochin* complex some variations in the size of the leaves and flowers, and the lengths and thicknesses of the tails must be acceptable. Unfortunately, some intermediate specimens exist between the *T. triglochin* complex and some of the other recognized species, such as *T. triaristella*,

which make positive identification often difficult. In her monograph on the genus *Masdevallia* in 1896, in which she included three species of *Trisetella*, Woolward was already aware of this problem.

Vegetatively all the species are small to very small, the leaves of most of the species being very narrow, sometimes semiterete. The leaves of all species are borne by abbreviated ramicauls. The slender peduncles, borne laterally from low on the ramicaul with an annulus, may be smooth, faintly verrucose, or coarsely verrucose and wiry. Faintly verrucose peduncles are seen in some populations of species characterized by smooth peduncles.

The inflorescence is a congested, successively few-flowered raceme. The dorsal sepal is shallowly connate to the lateral sepals, and the apex is produced into a tail. Except for one species (*T. hoeijeri*), the lateral sepals are completely connate into a more or less concave synsepal. In most species the tails of the lateral sepals emerge from the lateral margins near or below the apex. These tails suggested the tusks of a wild boar to Reichenbach. The tails of others emerge at the apex. In some populations of the *T. triglochin* complex the tails emerge from either the apex or below the apex. In some populations the tails are more or less thickened above the middle, even sometimes clavate.

The petals are small and membranous, about the size of the column they flank. The lips of all the species are basically similar with a pair of low, longitudinal carinae on the disc. The base of the lip is cleft with basal lobes protruding backward to either side of the compressed, keel-like column-foot. The delicate, membranous hinge is between the tip of the front surface of the column-foot and the base of the lip in the cleft between the basal lobes. The column is semiterete with the ventral anther hooded. The minute, granular tip of the pair of pollinia protrudes above the edge of the rostellar flap that separates the clinandrium from the stigma. The stigma is entire and large occuping most of the ventral surface of the column.

The flowers of all the species are resupinate. As with most other pleurothallids, the resupination does not result from a twisting of the pedicel and ovary, but from a "backward" bending of the pedicel to place the lip lowermost in the flower.

Today the total number of recognized species stands at 20. Four species are known from Central America, four from Colombia, 15 from Ecuador, at least four from Peru, and populations of the variable and widely distributed *T. triglochin* complex occur also in Amazonian Venezuela, Brazil and Bolivia. Each population of the latter varies to some degree from the next. These are all treated herein as geographical variations of *T. triglochin* to avoid chaos among the old names as well as a flood of new descriptions based on combinations of variable, minor features. Those populations that differ significantly from the *T. triglochin* complex have been maintained as species.

Two sections have been recognized, the unique *T. hoeijeri* with its spreading lateral sepals being segregated into a section of its own. All the other species are extremely closelly allied, apparently with common genes flowing back and forth among them. On the basis of the peduncle being smooth or rough the latter are separated into two subsections.

Trisetella Luer, Phytologia 47: 57, 1980.

Type: *Masdevallia triaristella* Rchb. f., Gard. Chron. 6: 226, 1876.

Ety.: From the Latin *trisetellus*, "with three little bristles," referring to the hair-like tails of the three sepals.

Syn.: *Masdevallia* sect. *Triaristellae* Rchb. f., Gard. Chron. 6: 226, 1876.

Triaristella Brieg., Die Orchideen 449, 1976, nom. invalid.

Triaristella Brieg. ex Luer, Selbyana 2: 205, 1978, non V. S. Malyavkina 1949.

Triaristellina Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983, nom. illeg.

Plants perennial, very small to medium in size, delicate, epiphytic, rarely lithophytic, caespitose, the rhizome very short between ramicauls; roots slender. Ramicauls erect to ascending, slender, non-pseudobulbous, much shorter than the leaf, unifoliate, partially or completely enclosed by 2 to 3 thin, imbricating sheaths at the base, the inflorescence emerging laterally with an annulus from near the base. **Leaf** erect, coriaceous to thickly coriaceous, smooth, green or dark green, sometimes suffused or spotted with purple, elliptical to narrowly elliptical, linear to terete, the apex acute to subacute, shallowly notched with a mucro in the sinus, the base narrowly cuneate, or gradually narrowed below, with or without a petiole. **Inflorescence** a succession of single, resupinate flowers in a few-flowered, congested raceme, borne by a slender, smooth or verrucose peduncle, longer or shorter than the leaf, with a bract below the middle; floral bracts thin, tubular, imbricating, pedicels slender, longer or shorter than the floral bract; ovary smooth to verrucose, trivalvate; **sepals** conspicuous, more or less membranous, variously shaded with yellow and purple, smooth to minutely pubescent or ciliate, the dorsal sepal ovate, connate in varying degrees to the lateral sepals to form a sepaline cup, the apex long-attenuate, often clavate, the lateral sepals usually connate into a considerably larger synsepal with the apices more or less abruptly contracted into slender or clavate tails, the tails emerging from the margin at or more often below the apex; **petals** small, inconspicuous, about as long as the column or lip, more or less membranous, oblong, ovate to elliptical, acute, obtuse to truncate or tridentate; **lip** rigid, oblong, ovate, elliptical to subpandurate, the apex subacute, obtuse to rounded, more or less thickened and smooth, the disc with a pair of longitudinal calli, smooth to verrucose, the base cordate, cleft, with the basal lobes flanking the column-foot, hinged in the cleft; **column** semiterete, the anther ventral, more or less hooded, the rostellum retrorse, the pollinia 2, yellow, obovoid, with elastic, more or less granular caudicles, the stigma large and ventral, the base of the column developed into a column-foot with the apex of the ovary and extended beyond the ovary, the foot laterally compressed and fitted between the basal lobes of the lip.

Trisetella sect. **Fissura** Luer, sect. nov.

Type: *Trisetella hoeijeri* Luer, Lindleyana 1: 192, 1986.

Ety.: From the Latin *fissura*, "a cleft," referring to the spreading instead of connate lateral sepals.

Sepala lateralia libera patentiaque.

This section is distinguished by the free, widely spread, lateral sepals with apical tails. Only one species from southern Ecuador is known.

Trisetella sect. **Trisetella**

Type: *Masdevallia triaristella* Rchb. f., Gard. Chron. 6: 266, 1876.

This section contains all the rest of the species of the genus. The lateral sepals are connate, at least up to the middle, into a more or less scaphoid synsepal. The tails often emerge from the margins below the apex. The petals and lips are vary little. Two subsections, based on the integument of the peduncle, i.e., whether or not it is scabrous, are recognized.

Trisetella sect. **Trisetella** subsect. **Trisetella**

Type: *Masdevallia triaristella* Rchb. f., Gard. Chron. 6: 266, 1876.

This subsection consists of six species distinguished by the slender, wiry, coarsely verrucose peduncles that are rough to touch. Lightly or microscopically verrucose peduncles that are nearly smooth to touch occur in several species included in the "smooth-stemmed" subsection (*Calvicaulis*).

Trisetella sect. **Trisetella** subsect. **Calvicaulis** Luer, sect. nov.

Type: *Trisetella gemmata* (Rchb. f.) Luer = *Masdevallia gemmata* Rchb. f., Gard. Chron. 2, 294, 1883

Ety.: From the Latin *calvicaulis*, "a smooth stem," referring to the peduncle that is smooth to touch.

Pedunculi calvi vel leviter verrucosi.

This subsection, consisting of the rest of the genus, is distinguished by peduncles that are essentially smooth to touch. The peduncles of some species, or the populations of some species with smooth peduncles, are lightly, minutely, or indistinctly verrucose.

EPITHETS PUBLISHED IN *TRISETELLA*

Trisetella abbreviata Luer
Trisetella andreettae Luer
Trisetella cordeliae Luer
Trisetella didyma (Luer) Luer
Trisetella dressleri (Luer) Luer
Trisetella escobarii Luer
Trisetella fissidens Luer & Hirtz
Trisetella gemmata (Rchb. f.) Luer
Trisetella hirtzii Luer
Trisetella hoeijeri Luer
Trisetella huebneri (Schltr.) Luer = **Trisetella triglochin**
Trisetella nodulifera Luer & Hirtz
Trisetella pantex (Luer) Luer
Trisetella regia Königer
Trisetella scobina Luer
Trisetella sororia Luer & Andreetta
Trisetella strumosa Luer & Andreetta
Trisetella tenuissima (C. Schweinf.) Luer
Trisetella triaristella (Rchb. f.) Luer
Trisetella trichaete (Rchb. f.) Luer = **Trisetella triglochin**
Trisetella tridactylites (Rchb. f.) Luer = **Trisetella triglochin**
Trisetella triglochin (Rchb. f.) Luer
Trisetella vittata (Luer) Luer

LIST OF ILLUSTRATIONS

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Trisetella andreettae Luer . . . . . Plate 2.
Trisetella cordeliae Luer . . . . . Plate 3.
Trisetella didyma (Luer) Luer. . . . . Plate 4.
Trisetella dressleri (Luer) Luer . . . . . Plate 5.
Trisetella escobarii Luer. . . . . Plate 6.
Trisetella fissidens Luer & Hirtz . . . . . Plate 7.
Trisetella gemmata (Rchb. f.) Luer . . . . . Plate 8.
Trisetella hirtzii Luer . . . . . Plate 9.
Trisetella hoeijeri Luer . . . . . Plate 10.
Trisetella nodulifera Luer & Hirtz . . . . . Plate 11
Trisetella pantex (Luer) Luer. . . . . Plate 12.
Trisetella regia Königer . . . . . Plate 13
Trisetella scobina Luer. . . . . Plate 14.
Trisetella sororia Luer & Andreetta . . . . . Plate 15.
Trisetella strumosa Luer & Andreetta . . . . . Plate 16.
Trisetella tenuissima (C. Schweinf.) Luer. . . . . Plate 17.
Trisetella triaristella (Rchb. f.) Luer. . . . . Plate 18., 19.
Trisetella triglochin (Rchb. f.) Luer . . . . . Plate 20., 21., 22., 23., 24.
Trisetella vittata (Luer) Luer . . . . . Plate 25.

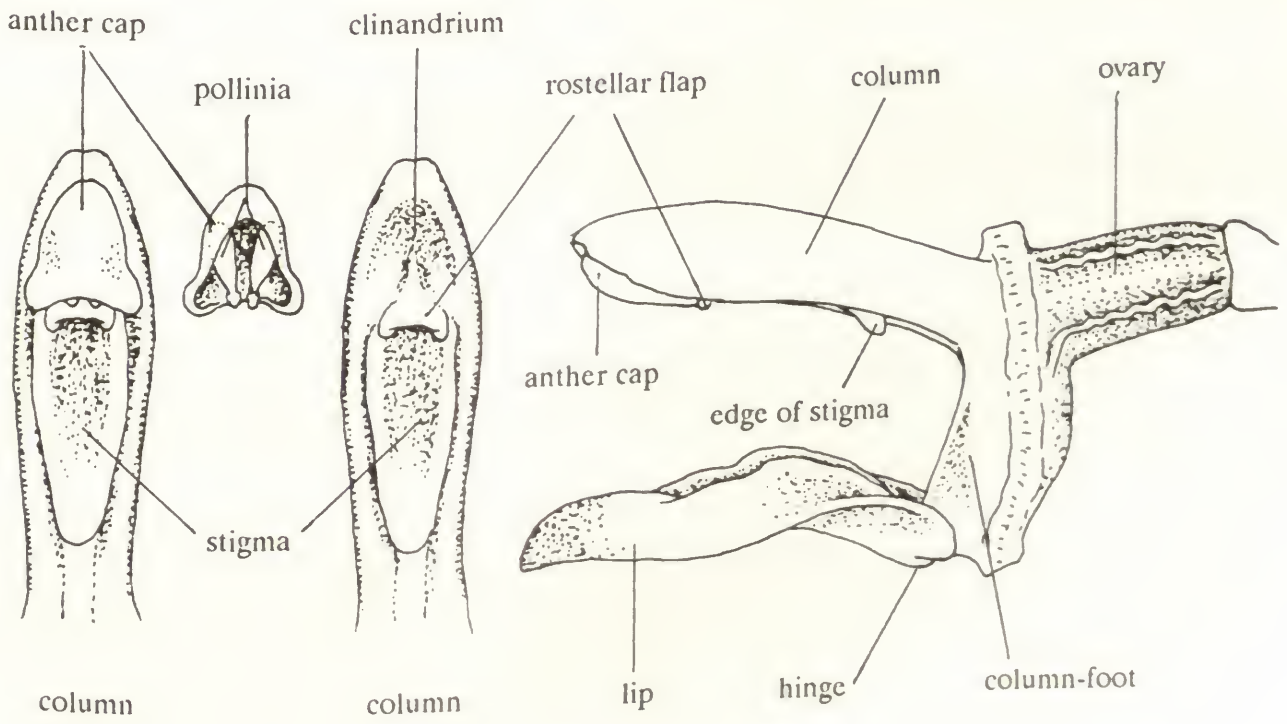


Figure 1. Details of the column.

KEY TO THE SECTIONS, SUBSECTIONS AND SPECIES OF *TRISETELLA*

Section *Fissura*

1' Lateral sepals free to the base, widespread ..... *T. hoeijeri*

* * *

1 Lateral sepals connate into a synsepal 2
2 Peduncles smooth to lightly verrucose 8

Section *Trisetella*
Subsection *Triaristella*

2' Peduncles coarsely verrucose 3

3 Synsepal broadly expanded, obtuse ..... *T. cordeliae*
3' Synsepal narrowly elongate, more or less acute 4

4 Tails of the lateral sepals approximate, produced at the apex ..... *T. didyma*
4' Tails of the lateral sepals produced laterally below the apex 5

5 Synsepal with a large, deep, retrorse mentum ..... *T. strumosa*
5' Synsepal with a shallow mentum 6

6 Lip with 2 calli ..... *T. triaristella*
6' Lip with more than 2 calli 7

7 Lip with 3 calli ..... *T. regia*
7' Lip with 4 calli ..... *T. scobina*

Subsection *Calvicaulis*

8 Tails originating from the apices of the lateral sepals. 9
8' Tails originating laterally from below the apices of the lateral sepals 12

9 Apices of the lateral sepals acute, continuous with the tails 10
9' Apices of the lateral sepals obtuse, the tails originating from the sides of the apices 11

10 Plant very small, the leaves up to 2 mm wide; sepals together with tails less than 8 mm long ..... *M. tenuissima*
10' Plant medium in size, the leaves more than 3 mm wide; sepals together with tails more than 12 mm long. ..... *T. vittata*

11 Synsepal narrowly oblong, more than 12 mm long ..... *T. andreettae*
11' Synsepal broadly oblong, less than 8 mm long ..... *T. dressleri*

12 Mature leaves less than 2 cm long, up to 1.5 mm wide;
mentum of the synsepal essentially absent to deep 13
12' Mature leaves more than 2 cm long; up to 5 mm wide
mentum of the synsepal more or less prominent 16

13 Lip with denticulate calli 14
13' Lip with non-denticulate calli 15

14 Synsepal ciliate; lip concave below the middle . . . . . *T. fissidens*
14' Synsepal not ciliate; lip not concave below the middle . . . . . *T. hirtzii*

15 Synsepal with very shallow or absent mentum . . . . . *T. abbreviata*
15' Synsepal with a prominent mentum . . . . . *T. triglochin*

16 Leaves large, up to 7 cm long, 5 mm wide;
peduncles shorter than the leaves . . . . . *T. escobarii*
16' Mature leaves less than 7 cm long, less than 4 mm wide;
peduncles usually longer than the leaves 17

17 Mentum of the synsepal below the middle, deeply concave,
the synsepal broadly convex above the middle;
carinae of the lip bluntly toothed . . . . . *T. pantex*
17' Not the above features 18

18 All three sepaline tails forwardly directed;
lip ovate, distinctly narrowed above the middle . . . . . *T. gemmata*
18' Not the above features. 19

19 Lip pandurate with an apical callus . . . . . *T. nodulifera*
19' Lip not pandurate with an apical callus 20

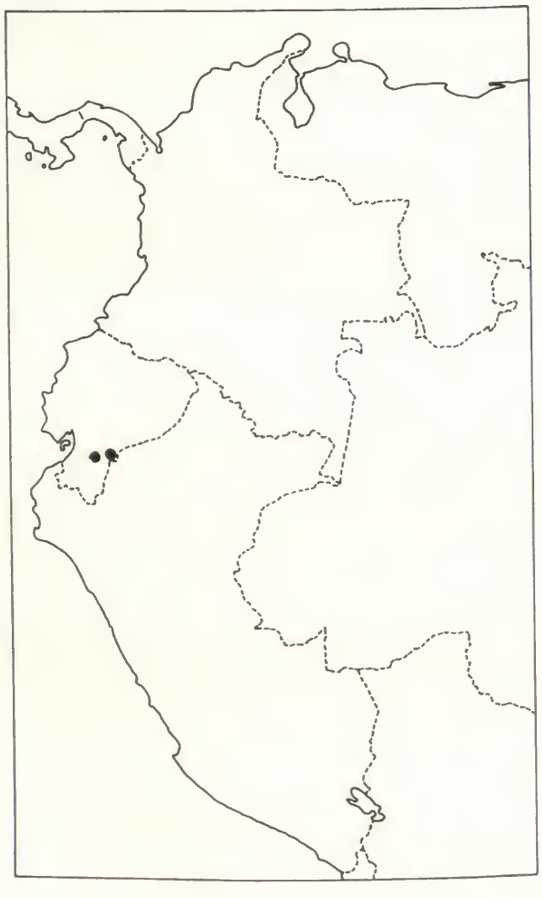
20 Raceme up to 7-flowered; tails of the sepals
short, thick and clavate . . . . . *T. sororia*
20' Raceme 2- to 3-flowered; tails of the sepals
slender, sometimes thickened toward the apex . . . . . *T. triglochin*

Trisetella abbreviata Luer, Phytologia 47: 82, 1980.

Ety.: From the Latin *abbreviatus*, "shortened," referring to the short vegetative and floral parts.

Plant very small, epiphytic, densely caespitose; roots slender. Ramicauls erect, 1-2 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly linear, semiterete, acute, 10-20 mm long, 1.5-2 mm wide. **Inflorescence** a succession of single flowers (2-3) borne in a congested raceme by a filiform, erect, smooth to faintly scabrous peduncle 30-40 mm long, with a bract below the middle, from low on the ramicaul; floral bracts 2-3 mm long; pedicel 5-6 mm long; ovary 1.5 mm long, faintly verrucose; **dorsal sepal** yellow with 3 thin, red veins, with the dorsal vein verrucose externally, transversely ovate, concave, 4 mm long, 5 mm wide, connate to the lateral sepals for 2 mm to form a sepaline cup, the obtuse apex conduplicate, contracted into an erect, yellow tail 12 mm long, slightly thickened toward the apex; **lateral sepals** purple, connate 16 mm to the apices into a narrowly oblong lamina 16 mm long, 4 mm wide, more or less flat without forming a mentum, the obtuse apices approximate, contracted laterally 3 mm below the apex into slender, purple, subapical tails 4 mm long; **petals** translucent yellow, suffused with purple medially, oblong, 2 mm long, 0.6 mm wide, the truncate apex with an abrupt apiculum; **lip** red, ovate, 2 mm long, 1 mm wide, the apex obtuse, thickened, the disc with a low pair of longitudinal calli, channeled centrally, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** yellow, suffused with red, semiterete, 2 mm long, the foot 1 mm long.

ECUADOR: Prov. of Zamora-Chinchipe: epiphytic in cloud forest between Loja and Zamora, alt. ca. 1500 m, collected by Janet Kuhn, flowered in cultivation at J & L Orchids, Easton, Ct., 16 Nov. 1977, *C. Luer 2209* (Holotype: SEL); Nambija, southeast of Zamora, alt. 1200 m, May 1985, *A. Hirtz 2571* (MO).



Trisetella abbreviata is apparently endemic in the wet forests of southeastern Ecuador where it has been found on several occasions. It is notable for the very small, narrowly terete leaves; a twice taller, subscabrous peduncle; flowers with a short dorsal sepal with an erect, slightly thickened tail; a flat, non-gibbous, non-ventricose synsepal with short tails below the apex; and minute petals and lip. These slight differences seem sufficient to maintain this species distinct from the variable and frequent *T. triglochin*.

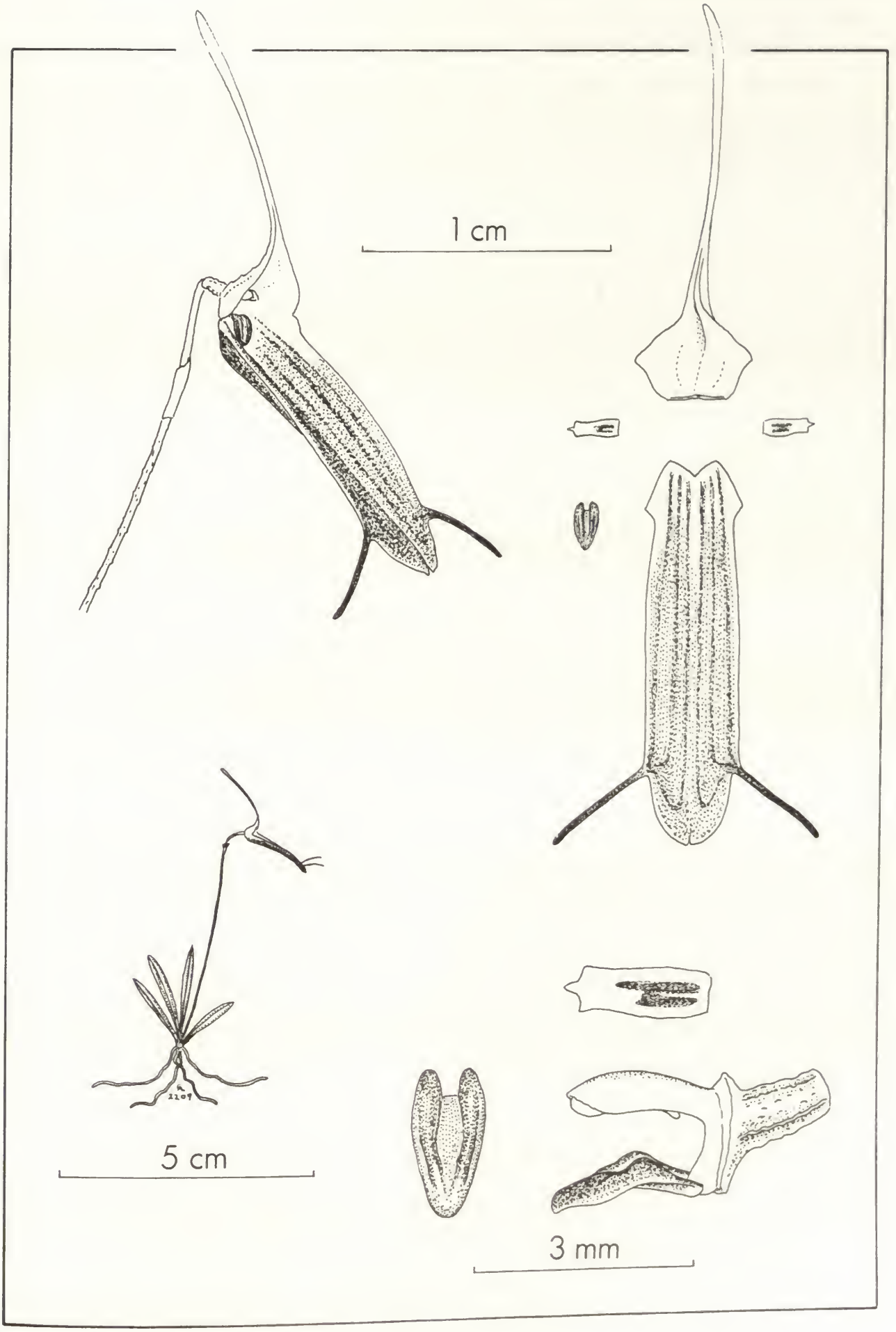


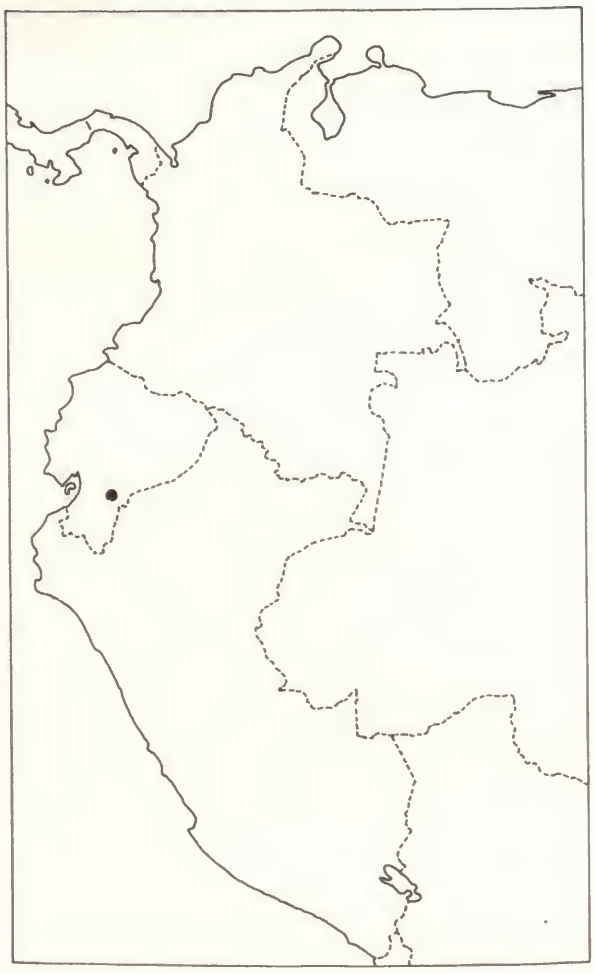
Plate 1. *Trisetella abbreviata* Luer

Trisetella andreettae Luer, Lindleyana 1: 186, 1986.

Ety.: Named in honor of Padre Angel Andreetta, Salesian father, presently of Paute, Ecuador, who discovered this species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-3 mm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, finely mottled with purple beneath, narrowly elliptical, subacute, 15-24 mm long, 3 mm wide. **Inflorescence** a succession (2-5) of single flowers borne in a congested raceme by a slender, erect to suberect, smooth (microscopically subverrucose) peduncle 30-40 mm long, with a bract near the base, from low on the ramicaul; floral bracts 3-4 mm long; pedicel 6-7 mm long; ovary 1.5 mm long, verrucose; **dorsal sepal** yellow with 3 brown veins, minutely ciliate, transversely ovate, concave, 4 mm long, 5.5 mm wide, connate to the lateral sepals for 2.5 mm to form a sepaline cup, the obtuse apex contracted into a tail 10 mm long, the tail thickened at the apex; **lateral sepals** purple with a yellow margin, minutely ciliate, minutely red-pubescent within, connate 14 mm into a narrowly oblong lamina 15 mm long, 6 mm wide at the expanded slightly concave base, 2.5 mm wide at the apex, the obtuse apices contracted apically into slender, yellow tails 4 mm long, the mentum broad, shallow, obtuse; **petals** translucent yellow, suffused with purple medially, oblong, 3.25 mm long, 1 mm wide, the obtuse apex with a minute apiculum; **lip** red-brown, oblong-ovate, 3.6 mm long, 1.5 mm wide, the apex obtuse, thickened, the disc with a low pair of longitudinal calli, channeled centrally, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** green, suffused with purple, semiterete, 3.5 mm long, the foot 1 mm long.

ECUADOR: Prov. of Morona-Santiago: epiphytic in rain forest near Río Calagrás, alt. 1600 m, 19 Sept. 1980, *C. Luer, J. Luer, A. Andreetta et al., 5505*, (Holotype: SEL).



Vegetatively this species is similar to *T. triglochin* Rchb. f., but the flowers have only a shallow, obtuse mentum. Both the yellow dorsal sepal and the red-purple synsepal of *T. andreettae* bordered in yellow are minutely ciliate. The tail of the dorsal sepal is clavate, and the tails of the synsepal are apical (not lateral) and short. However, the degree of thickening of the apex of the dorsal sepal and the length of the tails of the lateral sepals is variable in many species of the genus. The petals, lip, and column are not remarkably different from its relatives. Although slight, the differences seem sufficient to maintain this species distinct from the common *T. triglochin*.

Trisetella andreettae is locally abundant in tall forests along streams near Río Calagrás in the Oriente of Ecuador, where it was first discovered by Padre Andreetta and companions between 1978 and 1980 when the road to Gualaquiza was under construction.

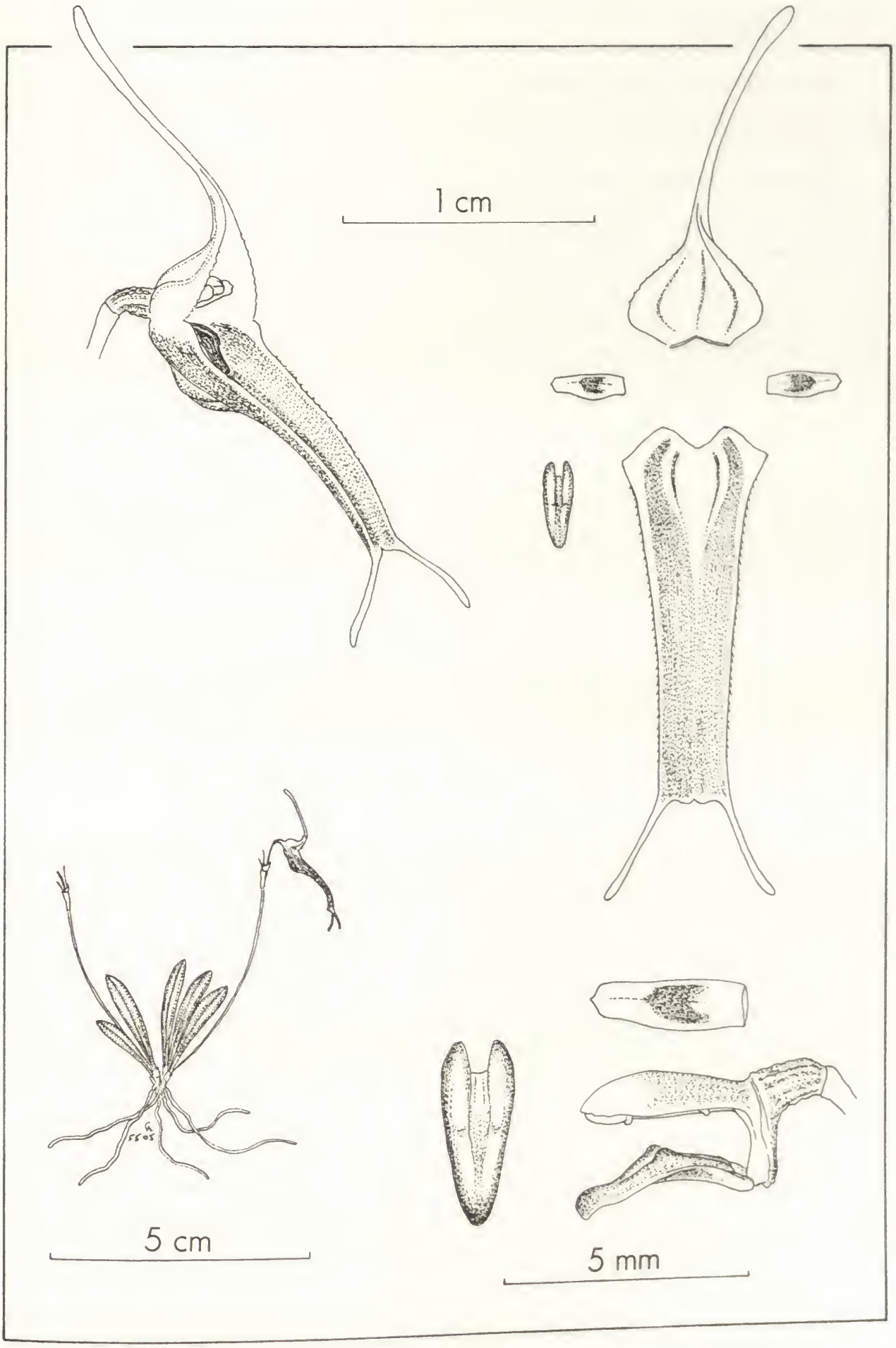


Plate 2. *Trisetella andreettae* Luer

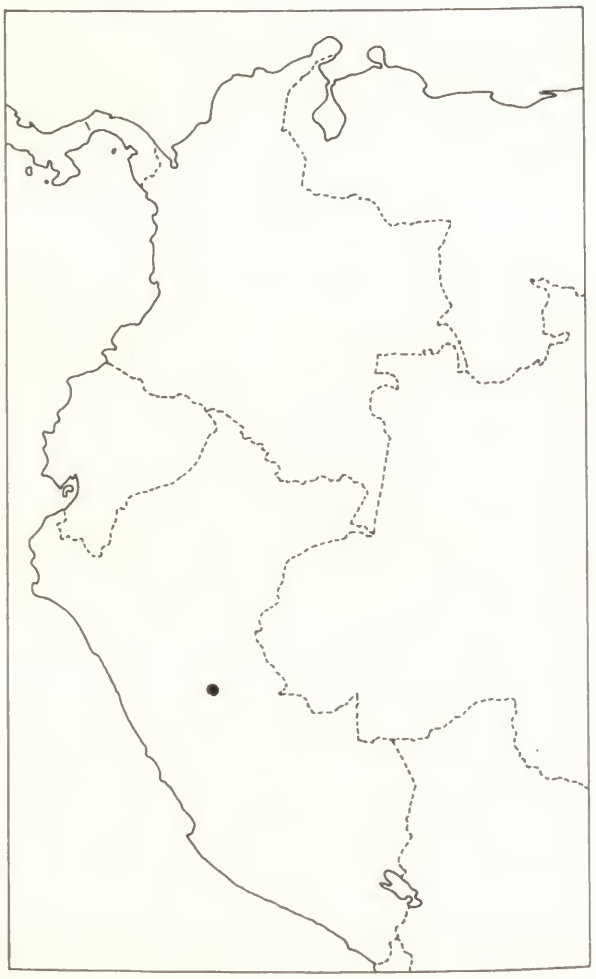
Trisetella cordeliae Luer, sp. nov.

Ety.: Named in honor of Cordelia Head Webb of J & L Orchids, Easton, CT., who discovered this species.

Planta parva flore grandi, pedunculo scarbroso foliis crassis anguste linearibus longiore, ovario verrucoso, sepalis lateralibus in laminam latum obtusum connatis cum mento parvo, sepalorum caudis clavatis et labello quinquecarinato.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls 4-5 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, fleshy, linear, semiterete, acute, 2.5-3 cm long, 1.5 mm wide. **Inflorescence** a succession of a few single flowers borne in a congested raceme by an erect, slender, verrucose peduncle 5-5.5 cm long, with a bract below the middle, from low on the ramicaul; floral bracts 5-6 mm long; pedicel 5-6 mm long; ovary 2 mm long, verrucose; **dorsal sepal** yellow-orange, minutely ciliate on the margins, transversely ovate, concave, 5 mm long, 8 mm wide expanded, connate to the lateral sepals for 3 mm to form a gaping, sepaline cup, the obtuse apex conduplicate, abruptly contracted into a slender, erect, terete, clavate tail 13 mm long; **lateral sepals** yellow-orange, suffused with purple above the middle, minutely short-pubescent, 13 mm long, connate 13 mm, into an oblong, widely expanded lamina, 9 mm wide, with a shallow mentum above the base, the apex rounded, abruptly contracted laterally 4 mm below the apex into slender, clavate tails 7-8 mm long; **petals** translucent yellow, with a purple midvein, oblong, 2.75 mm long, 0.9 mm wide, the apex truncate-tridentate; **lip** purple with the apex yellow, oblong-ovate, 3.25 mm long, 1.5 mm wide, the apex subacute, the disc with 5 longitudinal calli: a central pair of rounded calli above the base, flanked to either side by another, low, longitudinal callus, each with an acute, erect process near the middle, the fifth callus midline near the middle, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** purple, semiterete, 3 mm long, the foot channeled, 1 mm long.

PERU: Dept. of Huánuco: Debesorea near Tingo Maria, alt. 1800 m, epiphytic on large, felled tree, collected out of flower 1 Oct. 1987 by C. Head, W. Turey & M. Arias, flowered in cultivation at J & L Orchids at Easton, CT. 188-290, June 1988, *C. Luer 13729* (Holotype: MO).



Vegetatively this large-flowered species is indistinguishable from most of the other members of the genus. The peduncle is lightly but distinctly scabrous except near the apex. The lateral sepals are connate into a broadly expanded synsepal with a rounded apex with lateral, diverging, clavate tails. The petals are not remarkable, but five longitudinal calli course down the lip. An acute, erect process is present near the middle of the lateralmost pair of calli.

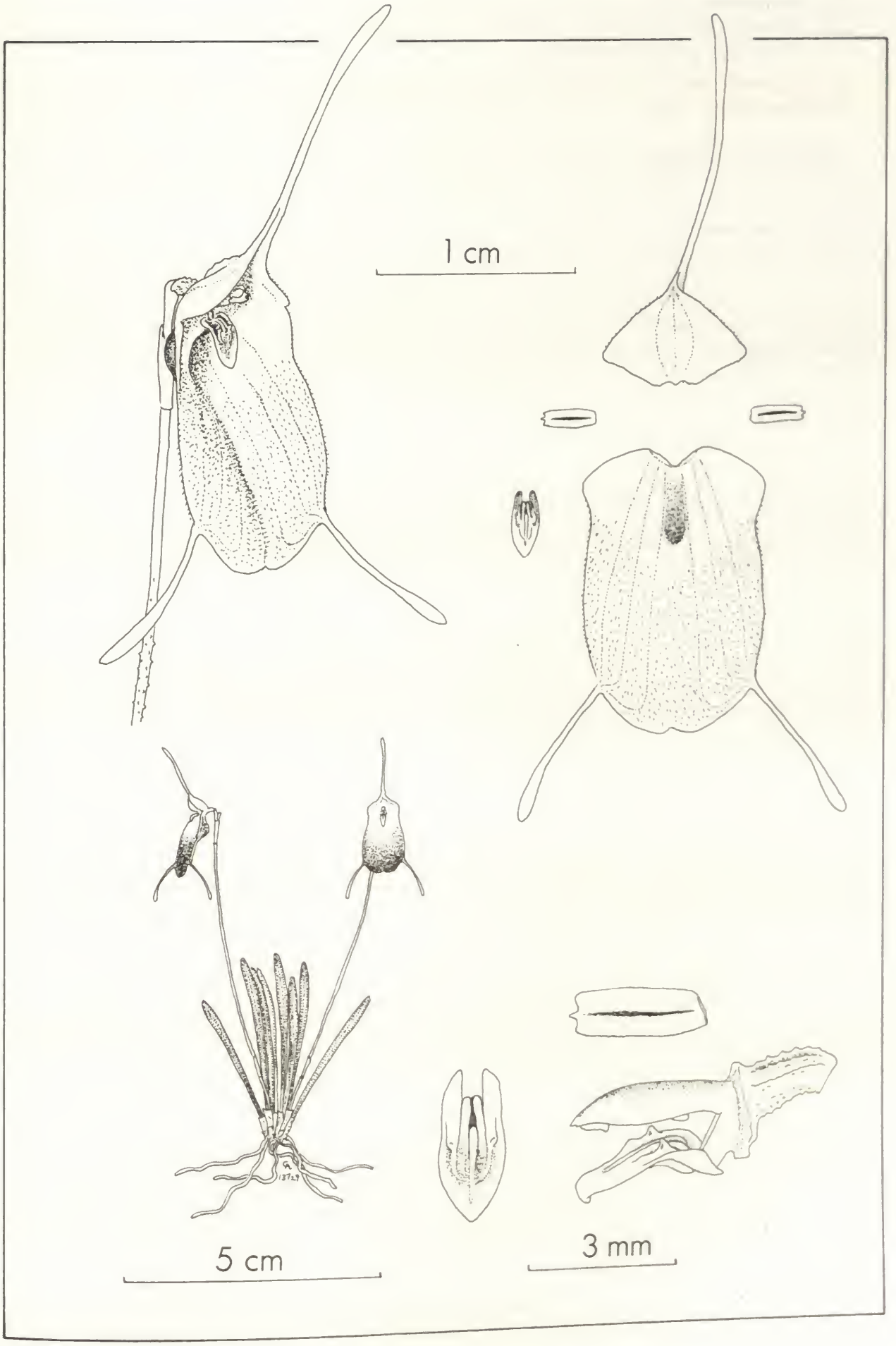


Plate 3. *Trisetella cordeliae* Luer

Trisetella didyma (Luer) Luer, Phytologia 47: 57, 1980.

Bas.: *Masdevallia didyma* Luer, Phytologia 39: 195, 1978.

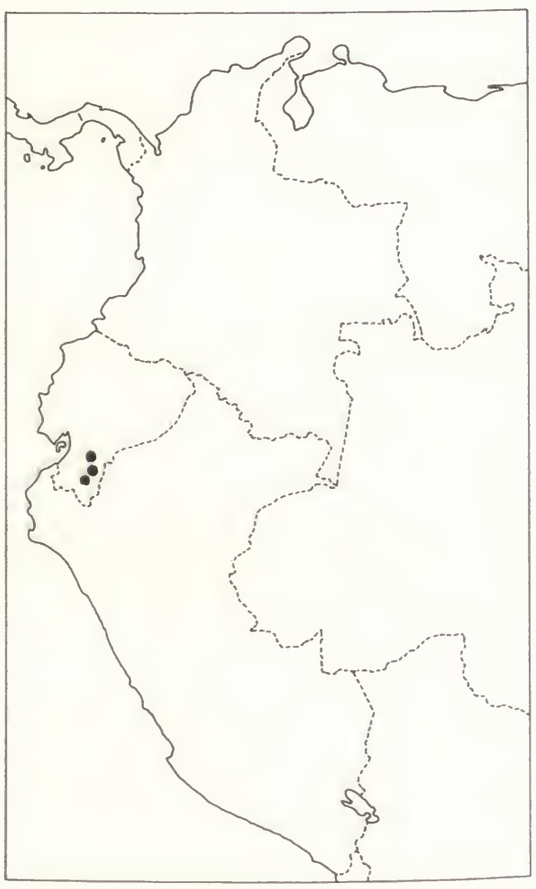
Ety.: From the Greek *didymos*, "doubled, twinned," in reference to the pair of approximate tails of the lateral sepals.

Syn.: *Triaristella didyma* (Luer) Luer, Selbyana 2: 205, 1978.

Syn.: *Triaristellina didyma* (Luer) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-4 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, dark green, speckled and suffused with purple beneath, narrowly elliptical, subacute to acute, 25-45 mm long, 3-4 mm wide. **Inflorescence** a succession (2-3) of single flowers borne in a congested raceme by a slender, erect to suberect, verrucose peduncle 4.5-9 cm long, with a bract near the base, from low on the ramicaul; floral bracts 3-4 mm long; pedicel 4 mm long; ovary 2 mm long, subverrucose with undulate carinae; **dorsal sepal** yellow, suffused with purple, with the midvein subcarinate-verrucose, transversely ovate, concave, 6 mm long, 6 mm wide, connate to the lateral sepals for 2 mm to form a sepaline cup, the obtuse apex contracted into a slender, erect, yellow tail 16-20 mm long; **lateral sepals** heavily suffused and veined in purple, connate ca. 18 mm into a narrowly ovate lamina 20-25 mm long, 6 mm wide at the expanded slightly concave base, 3 mm wide at the apex, the subacute apices approximate, contracted into slender, yellow tails 4 mm long, the mentum broad, shallow, obtuse; **petals** translucent yellow, suffused with purple medially, oblong, acute, 3.5 mm long, 1 mm wide; **lip** purple, ovate, 4-15 mm long, 1.5 mm wide, the apex rounded, thickened, the disc with a low pair of longitudinal, subundulate, subverrucose calli, channeled centrally, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** green, suffused with purple, semiterete, 4 mm long, the foot 1.5 mm long.

ECUADOR: Prov. of Zamora-Chinchipe: epiphytic along the road between Loja and Zamora, alt. ca. 1700 m, May 1973, collected by B. Malo, flowered in cultivation at Tarqui near Cuenca, 14 July 1977, *C. Luer 1705* (Holotype: SEL); epiphytic in cloud forest south of Zamora toward Zumba, alt. 1450 m, 27 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10967* (MO); wet forest south of Zamora, alt. 1500 m, 27 Jan. 1989, *S. Dalström & T. Höijer 1207* (MO). Prov. of Loja: epiphytic in cloud forest south of Yangana, alt. 2500 m, May 1981, flowered in cultivation 23 Dec. 1981, *C. Luer, J. Luer & D. D'Alessandro 6788* (SEL).



This species is relatively frequent in the wet forests of southern Ecuador where it was first discovered and cultivated by Benigno Malo in 1973. The comparatively large, broad leaves are flecked with purple beneath, and the peduncle is coarsely verrucose. The slender tail of the dorsal sepal stands erect. The lateral sepals are very narrow and connate to near the apices. Continuing in the same plane from the apices protrudes a parallel pair of approximate, straight tails.

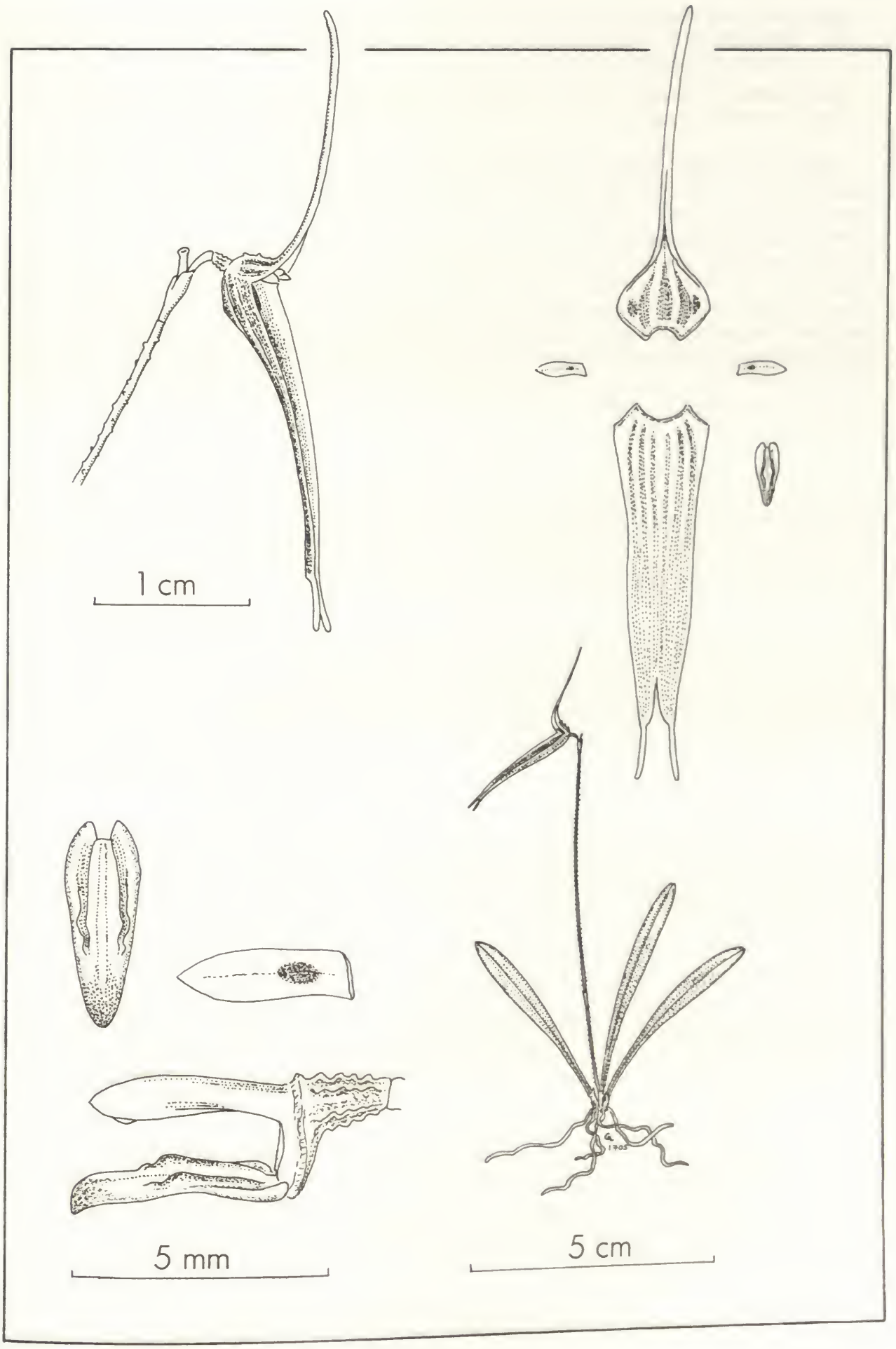


Plate 4. *Trisetella didyma* (Luer) Luer

Trisetella dressleri (Luer) Luer, Phytologia 47: 57, 1980.

Bas.: *Masdevallia dressleri* Luer, Selbyana 3: 20, 1976.

Ety.: Named in honor of Dr. Robert L. Dressler, investigator of the flora of Panama, who has been long familiar with this species.

Syn.: *Triaristella dressleri* (Luer) Luer, Selbyana 2: 203, 1978.

Syn.: *Triaristellina dressleri* (Luer) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-4 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, narrowly elliptical, acute, narrowly cuneate below into the base, 10-18 mm long, 3-4 mm wide. **Inflorescence** a succession of single flowers borne in a congested raceme by a slender, erect, smooth peduncle 25-40 mm long, with a bract near the base, from low on the ramicaul; floral bracts 3 mm long; pedicel 5-6 mm long; ovary 1 mm long; **dorsal sepal** yellow, lightly suffused with red along the veins, minutely ciliate along the free margins, transversely ovate, concave, 4 mm long, 4-4.5 mm wide, connate to the lateral sepals for 2 mm to form a sepaline cup, the obtuse apex contracted into a slender, subclavate, erect tail 4 mm long; **lateral sepals** red-purple, connate 6 mm into a deeply concave, oblong, obtuse lamina 6 mm long, 6 mm wide expanded, with a broad mentum, the tails thick, yellow-greenm, 2.5 mm long, produced at the apex; **petals** translucent yellow, suffused with purple medially, oblong, 2.3 mm long, 0.6 mm wide, the apex truncate, minutely apiculate; **lip** maroon, ovate, 3 mm long, 1.3 mm wide, the apex narrowly obtuse, the disc with a low pair of longitudinal calli, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** green, suffused with red, semiterete, 2.5 mm long, the foot 1 mm long.

PANAMA: Prov. of Panama: epiphytic along the Altos de Pacora road, alt. 650 m, 4 March 1976, *C. Luer, J. Luer, P. Taylor & R. L. Dressler 730* (Holotype: SEL); Cerro Jefe, alt. 900 m, 15 Oct. 1967, *R. L. Dressler 3090* (MO); same area, *F L Stevenson 9575-1* (SEL). Prov. of Coclé: cloud forest above El Valle, alt. 1000 m, 15 Aug. 1971, *H. Wiehler 71273a* (SEL).

This small species, closely allied to the *T. triglochin* complex, is locally abundant in eastern Panama where it has been known to Dressler for many years. It is characterized by the very small habit with proportionately broad leaves; small flowers with a broad, deep, boat-shaped synsepal with a pair of short, thick, apical tails.

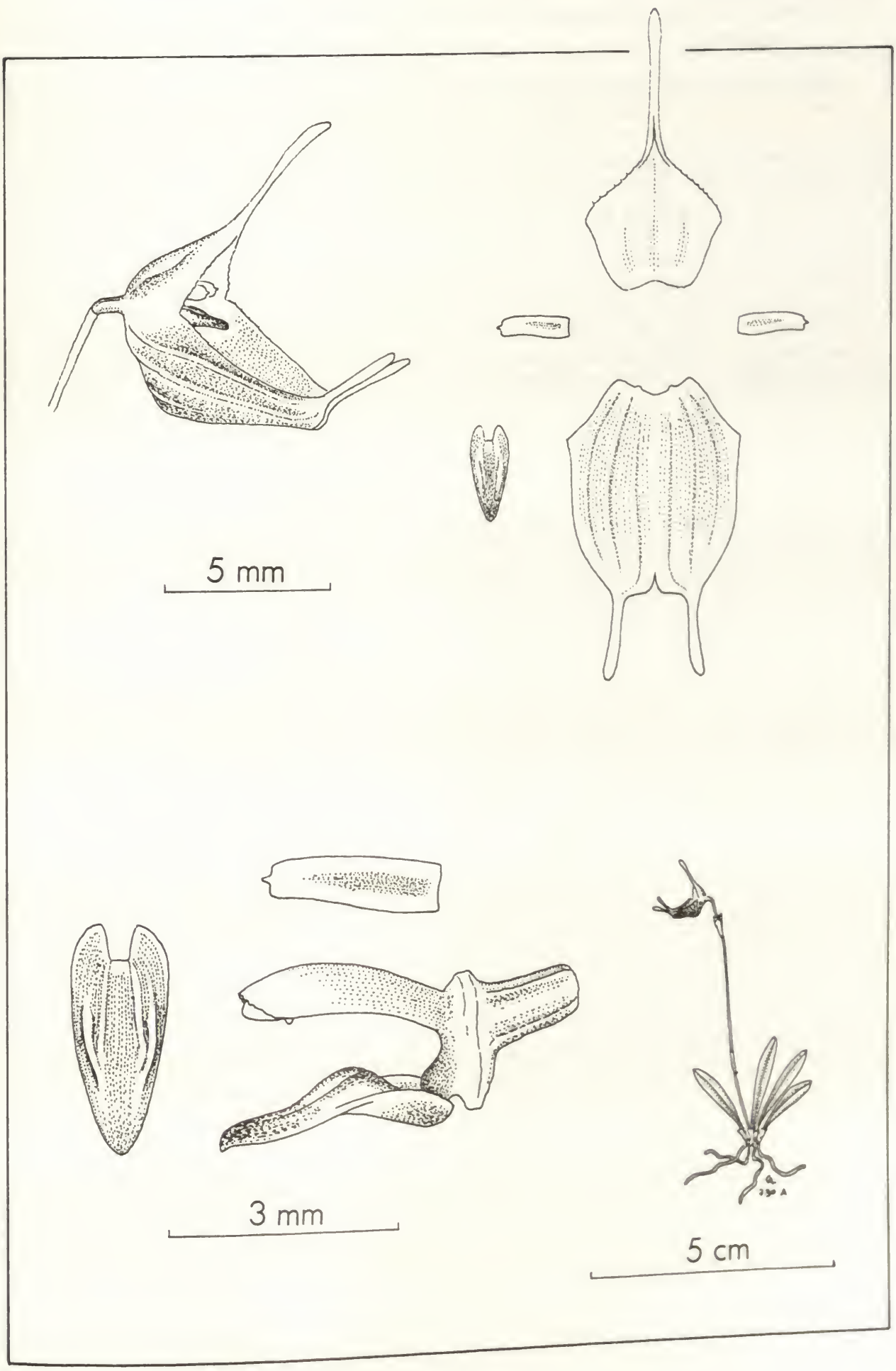


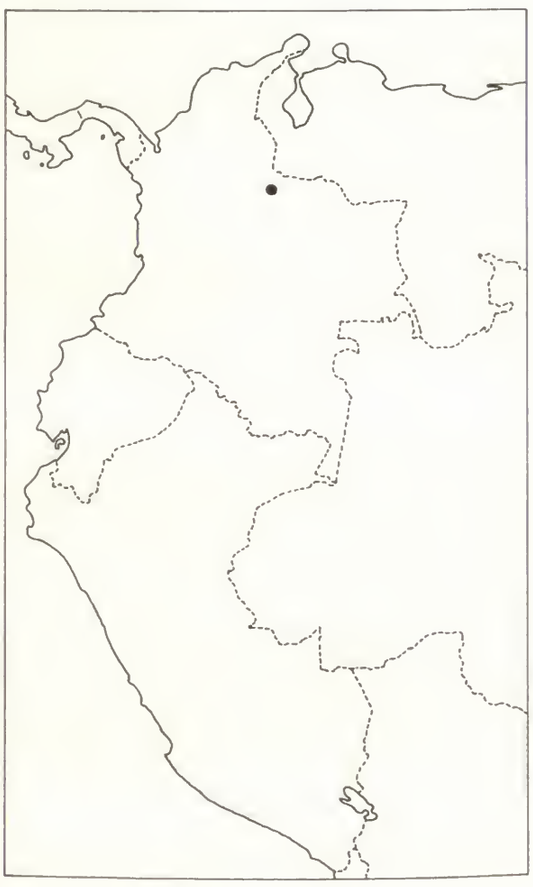
Plate 5. *Trisetella dressleri* (Luer) Luer

Trisetella escobarii Luer, Lindleyana 1: 188, 1986.

Ety.: Named in honor of Rodrigo Escobar Restrepo of Medellín, Colombia, who discovered this species.

Plant large for the genus, epiphytic, caespitose; roots slender. Ramicauls 4-5 mm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, narrowly linear, subacute, 3-7.5 cm long, 4-5 mm wide. **Inflorescence** a succession of single flowers borne in a congested raceme by a slender, smooth, erect peduncle 3-5 cm long, with a bract near the middle, from low on the ramicaul; floral bracts 3 mm long; pedicel 5 mm long; ovary 1.5 mm long, the ribs subundulate; **dorsal sepal** yellow with 3 purple veins, transversely ovate, concave, 6 mm long, 6.5 mm wide, connate to the lateral sepals for 3 mm to form a gaping, sepaline cup, the obtuse apex contracted into an erect, stout, more or less thickened, yellow-green tail 7 mm long; **lateral sepals** red-purple with darker veins, connate 7 mm into an oblong, shallowly concave lamina 10.5 mm long, 9 mm wide, the obtuse apices contracted laterally below the apex into subapical, stout tails 4-5 mm long, the mentum broad, shallow, obtuse, near the middle; **petals** yellow, suffused with purple below the middle, broadly oblong, 3.5 mm long, 1.75 mm wide, the truncate apex erose with a short apiculum; **lip** dark red-purple, ligulate, 4.5 mm long, 1.75 mm wide, the apex subacute, thickened, the disc with a low pair of longitudinal, undulate calli, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** green, suffused with purple, semiterete, 4 mm long, the foot 2 mm long.

COLOMBIA: Dept. of Norte de Santander: epiphytic in cloud forest, Alto de Santa Inéz, alt. 2100 m, 13 May 1984, *C. Luer, J. Luer, R. Escobar & E. Valencia 10324* (Holotype: MO); same area, 13 May 1982, *C. Luer, R. Escobar & & D. Portillo 7853* (SEL).



This species, vegetatively the largest of the genus, is closely related to the widely distributed and variable *T. triglochin* complex, but *T. escobarii* is readily identified by the combination of long leaves up to 5 mm wide, smooth peduncles shorter than the leaves, a yellow dorsal sepal with three purple stripes, red-purple lateral sepals with short, subapical tails, broad petals, and an oblong lip with undulate carinae. *Trisetella escobarii* is locally abundant in wet, cloud forests around Santa Inéz in the Eastern Cordillera of Colombia.

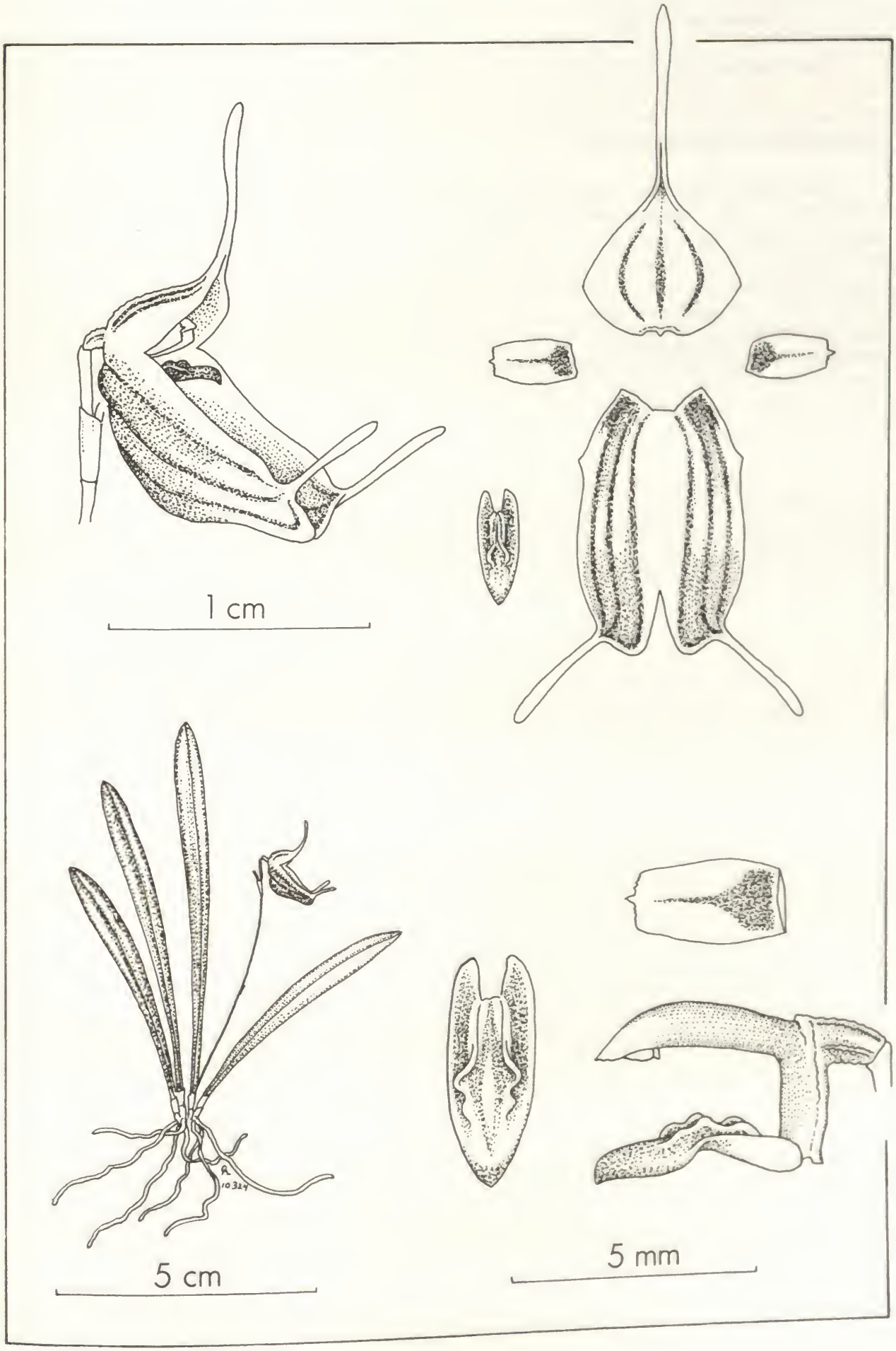


Plate 6. *Trisetella escobarii* Luer

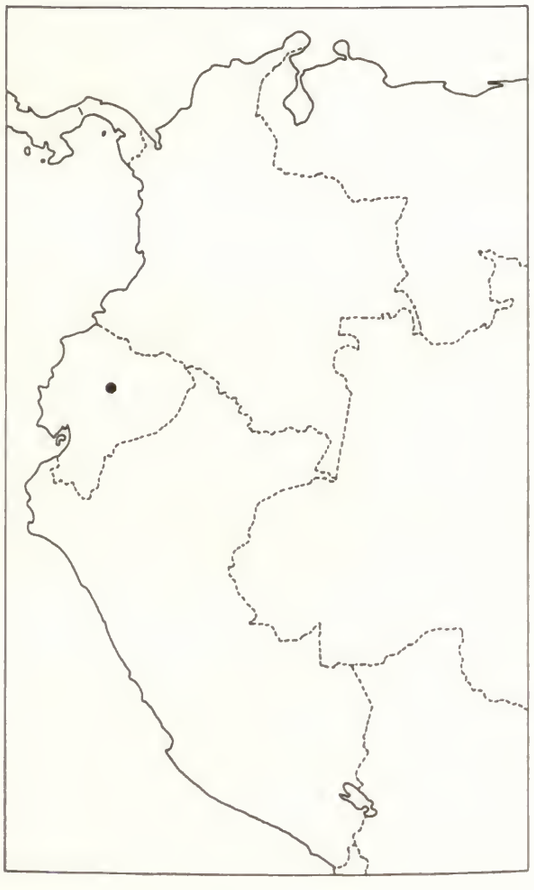
Trisetella fissidens Luer & Hirtz, sp. nov.

Ety.: From the Latin *fissidens*, "a cracked tooth," referring to the jagged, toothlike processes on the lip.

Inter species generis *Trisetellae* Luer species haec habitu parvo foliis anguste semiteretibus, sepalis ciliatis, sepalo dorsali proportione parvo cum caudam capillari leviter incrassatam, sepalorum caudis capillaribus, labello infra medium concavo carinis supra medium irregulater dentatis distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-3 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, semiterete, channeled, narrowly elliptical to linear, acute, 15-20 mm long, 1-1.5 mm wide. **Inflorescence** a succession of single, purple flowers borne in a congested raceme by a slender, erect, smooth peduncle 25-35 mm long, with a bract below the middle, from low on the ramicaul; floral bracts 3-4 mm long; pedicel 5 mm long; ovary 2 mm long, subverrucose; **dorsal sepal** minutely ciliate, transversely ovate, concave, 3 mm long, 4 mm wide expanded, connate to the lateral sepals for 1.25 mm to form a gaping sepaline cup, the apex obtuse, conduplicate, contracted into a more or less reflexed, slender tail 9 mm long, slightly thickened toward the apex; **lateral sepals** ciliate, minutely pubescent within, connate into an oblong, concave, obtuse lamina 11 mm long, 6 mm wide expanded, the tails slender, 7 mm long, emerging laterally 2 mm below the apex; **petals** translucent, membranous, oblong, 2 mm long, 1.75 mm wide, the apex truncate, apiculate, microscopically erose; **lip** ovate, 3 mm long, 1.5 mm wide, concave below the middle with thin margins, the apex narrowly obtuse, thick with the margins decurved, the disc with a pair of carinae with, irregular, acute teeth above the middle of the lip, channeled centrally, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** semiterete, 2 mm long, the foot 0.75 mm long.

ECUADOR: Prov. of Napo: "Hollin-Loreto," alt. 1000 m, Nov. 1988, *A. Hirtz 3924* (Holotype: MO), C. Luer illustr. 14368



This species was recently discovered in the Oriente of Ecuador by Alexander Hirtz. Although it is similar to the ubiquitous *T. triglochin* complex, *T. fissidens* is distinguished by the proportionately small dorsal sepal with a slender tail slightly thickened near the apex; ciliate sepals with the slender tails of the lateral sepals not thickened; and an ovate lip thinly concave in the lower half with a few irregular, pointed teeth on the carinae above the middle.

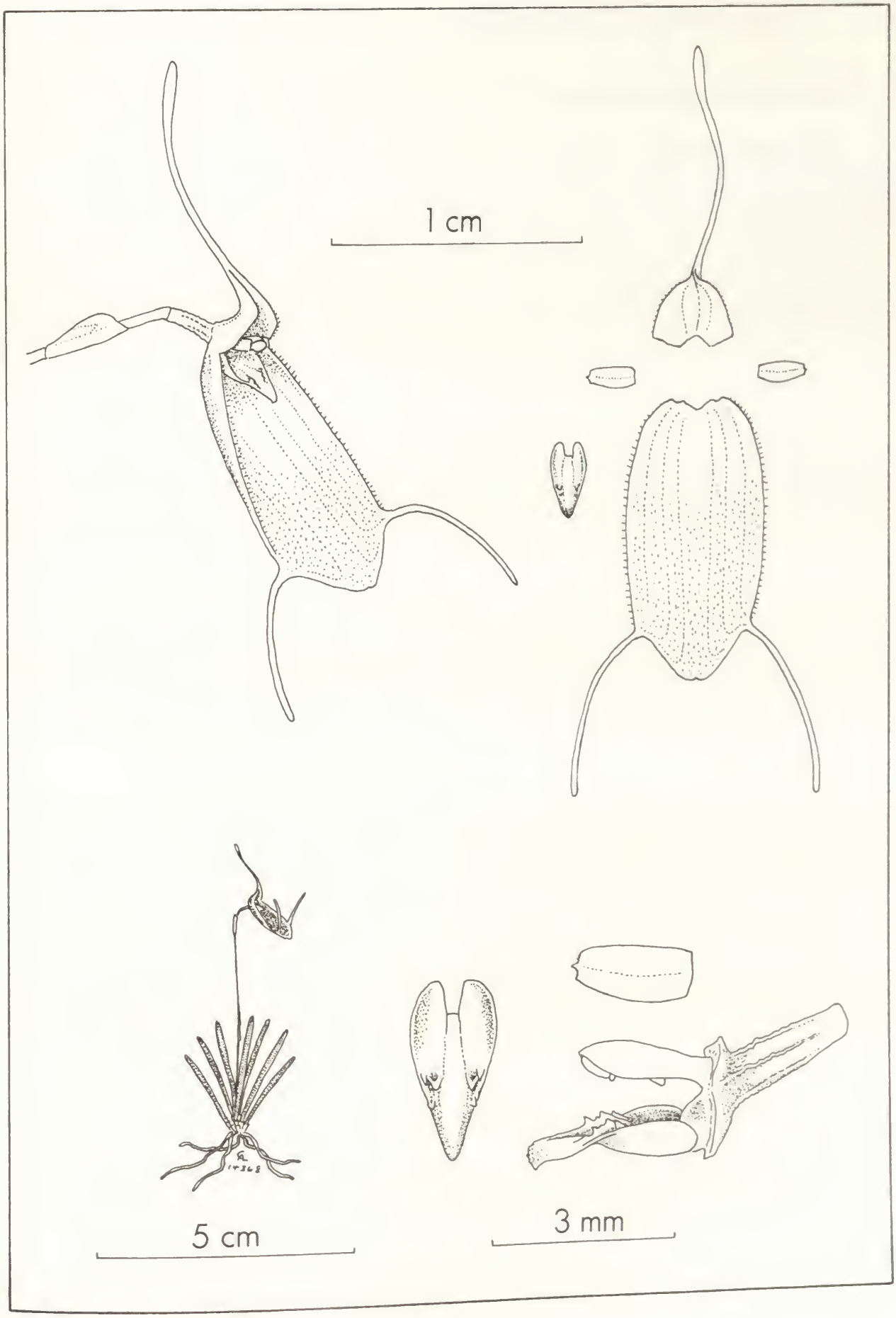


Plate 7. *Trisetella fissidens* Luer & Hirtz

Trisetella gemmata (Rchb. f.) Luer, Phytologia 47: 57, 1980.

Bas.: *Masdevallia gemmata* Rchb. f., Gard. Chron. 19: 294, 1883.

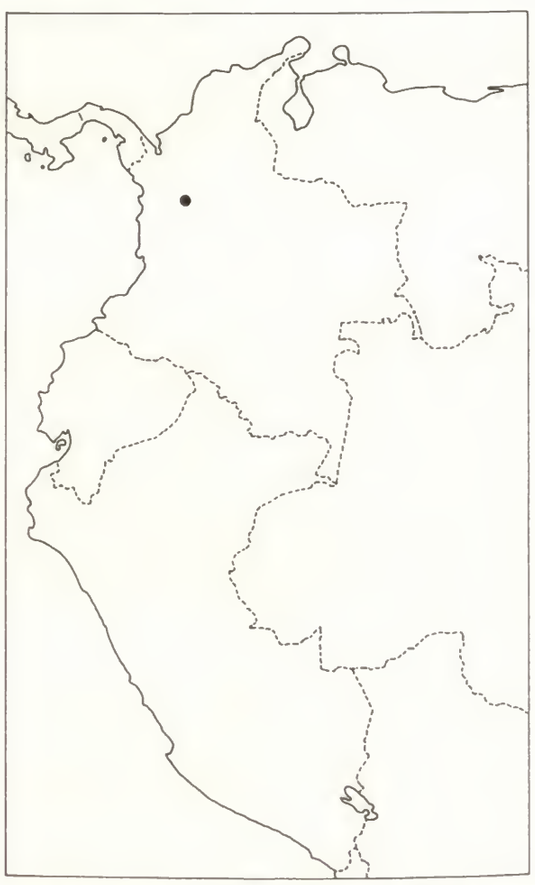
Ety.: From the Latin *gemmatus*, "with buds, or gems" in reference "to the hundreds of purple, neatly light-breaking papillae, which stand by crowds on the anterior parts of the sepals, and a few on the lip."

Syn.: *Triaristella gemmata* (Rchb. f.) Luer, Selbyana 2: 205, 1978.

Syn.: *Triaristellina gemmata* (Rchb. f.) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 3-5 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, faintly mottled with purple beneath, narrowly elliptical, acute to subacute, 3-5 cm long, 3-4 mm wide. **Inflorescence** a succession (2-5) of single flowers borne in a congested raceme by a slender, erect, smooth peduncle 4-6 cm long, with a bract below the middle, from low on the ramicaul; floral bracts 4-5 mm long; pedicel 6-7 mm long; ovary 2 mm long, subverrucose; **dorsal sepal** orange with thin, brown veins, triangular, concave, 6 mm long, 6.5 mm wide expanded, connate to the lateral sepals for 2 mm to form a gaping sepaline cup, the subacute apex contracted into a slender, forwardly directed tail 20 mm long; **lateral sepals** red-purple, yellow toward the base, minutely red-pubescent within, connate 15 mm into an elliptical, concave, obtuse lamina 17 mm long, 11 mm wide expanded, the subacute apices approximate, contracted 1-2 mm below the apex into slender, yellow, forwardly directed tails 14 mm long; **petals** translucent yellow, faintly suffused with rose medially, elliptical, 3.5 mm long, 2 mm wide, the obtuse apex minutely tridenticulate; **lip** red-brown, ovate, 5 mm long, 2.5 mm wide at the base, the 1 mm wide at the rounded, thickened apex, the disc with a low pair of subverrucose, longitudinal calli, channeled centrally, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** greenish white, semiterete, 3.5 mm long, the foot suffused with rose, 1.5 mm long.

COLOMBIA: without locality or collector, cultivated by *J. O'Brien s.n.* (Holotype: W). Dept. of Antioquia: Munic. of Valdivia, Frisolera, alt. 1700-1900 m, collected by J. M. Serna, 1974, cultivated by M. & O. Robledo at La Ceja, flowered in cultivation 5 Oct. 1977, *C. Luer 1915* (MO, SEL).



This species was cultivated in England by Mr. James O'Brien in 1881, and a flowering specimen was forwarded to Professor Reichenbach in Hamburg. Its origin was unknown, but it is now known to be rare and local in the Central Cordillera of Colombia. In his publication of this species in 1883 Reichenbach describes the plant in every detail, comparing the sepals with microscopic, purple papillae to those of his spectacular *Masdevallia veitchiana*.

The comparatively large flowers of *Trisetella gemmata* are readily distinguished by the cymbiform synsepal, broadly concave near the middle, and studded within by a minute, red, glandular pubescence. The petals are elliptical, and the lip is ovate, broadest at the base and narrowest at the apex.

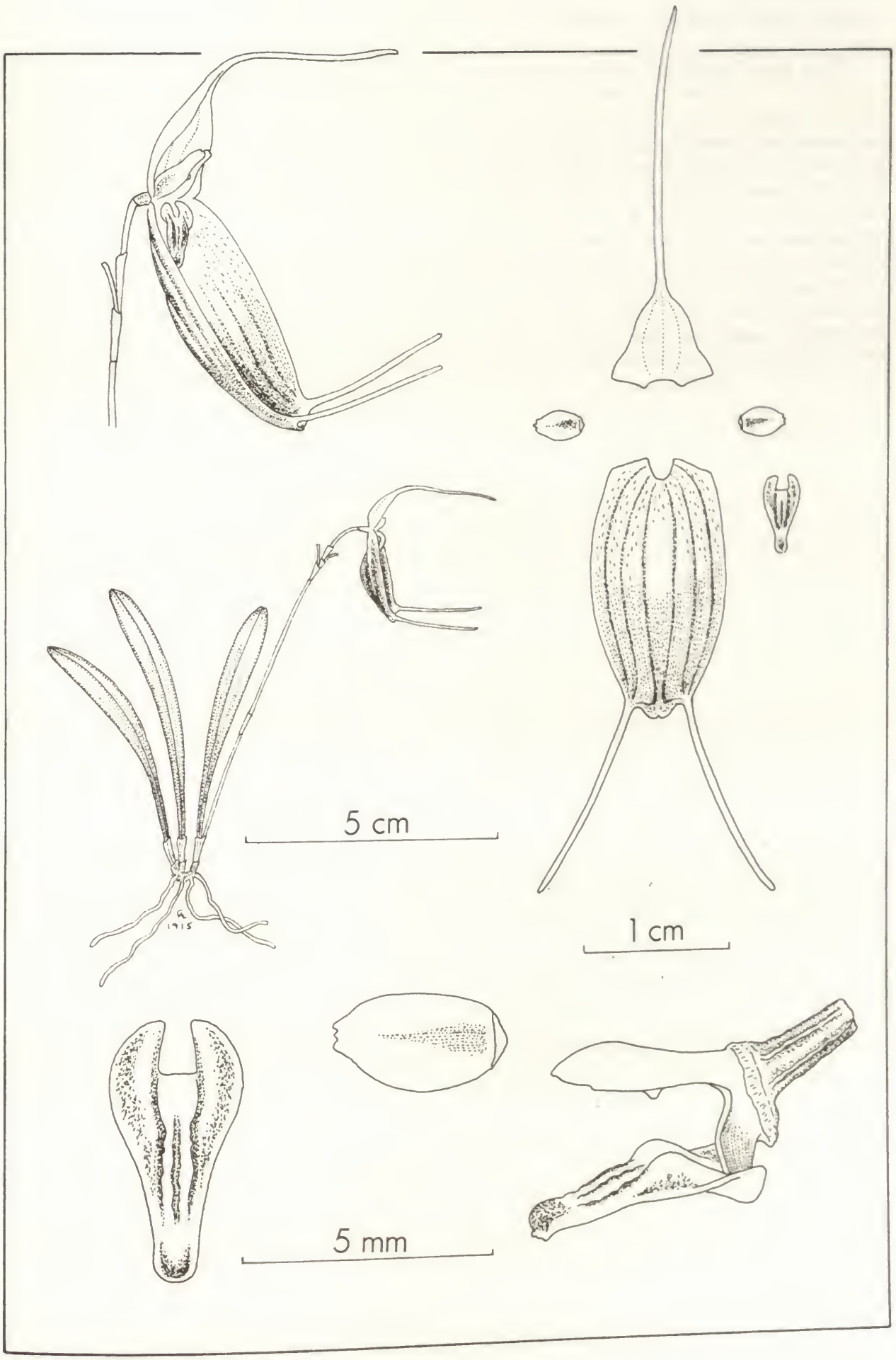


Plate 8. *Trisetella gemmata* (Rchb. f.) Luer

Trisetella hirtzii Luer, Lindleyana 1: 190, 1986.

Ety.: Named in honor of Alexander C. Hirtz of Quito, Ecuador, who discovered this species.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls erect, 4-5 mm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, obtuse, 13-17 mm long, 3-4 mm wide. **Inflorescence** a succession of single flowers borne in a congested raceme by a very slender, smooth, erect peduncle 20-25 mm long, with a bract near the base, from low on the ramicaul; floral bracts 3 mm long; pedicel 2 mm long; ovary 2 mm long, the ribs shortly fimbriate; **sepals** bright rose, glabrous, the dorsal sepal transversely ovate, concave, 4 mm long, 5 mm wide, connate to the lateral sepals for 2 mm to form a gaping, sepaline cup, the acute free portion microscopically ciliate, the obtuse apex contracted into an erect, slender, orange tail 11 mm long, the lateral sepals connate 9 mm into an oblong lamina 10.5 mm long, 5.5 mm wide, slightly concave, the transversely obtuse apices contracted laterally into slender white tails 10 mm long, the mentum broad, shallow, near the middle; **petals** translucent white, oblong, 2.75 mm long, 1 mm wide, the truncate apex erose with an acute apiculum; **lip** red-brown, oblong-ovate, 3.25 mm long, 1.5 mm wide, the apex obtuse, thickened, the disc with a low pair of longitudinal calli each with a small, acute, uncinate tooth below the middle, channeled centrally, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** white. semiterete, 2.75 mm long, the foot 1 mm long.

ECUADOR: Prov. of Morona-Santiago: epiphytic in wet forest, Cordillera del Condor, east of Los Encuentros, alt. 1500 m, *C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11914* (Holotype: MO); Cordillera del Cutucú, forest along the new road between Mendez and Morona, alt. 950 m, 18 Jan. 1989, *C. Luer, J. Luer, P. Jesup, A. Jesup & A. Hirtz 13982* (MO).

Although closely related to the *T. triglochin* complex, this very colorful, small-flowered species is easily identified by the relatively broad, obovate leaves; a shortly fringed ovary; bright rose sepals with an orange tail of the dorsal sepal and white tails of the lateral sepals; and a pair of small, uncinate processes on the calli of the lip.

Trisetella hirtzii has been found recently several times in the isolated cordilleras of the Condor and Cutucú of southeastern Ecuador where it is apparently endemic.

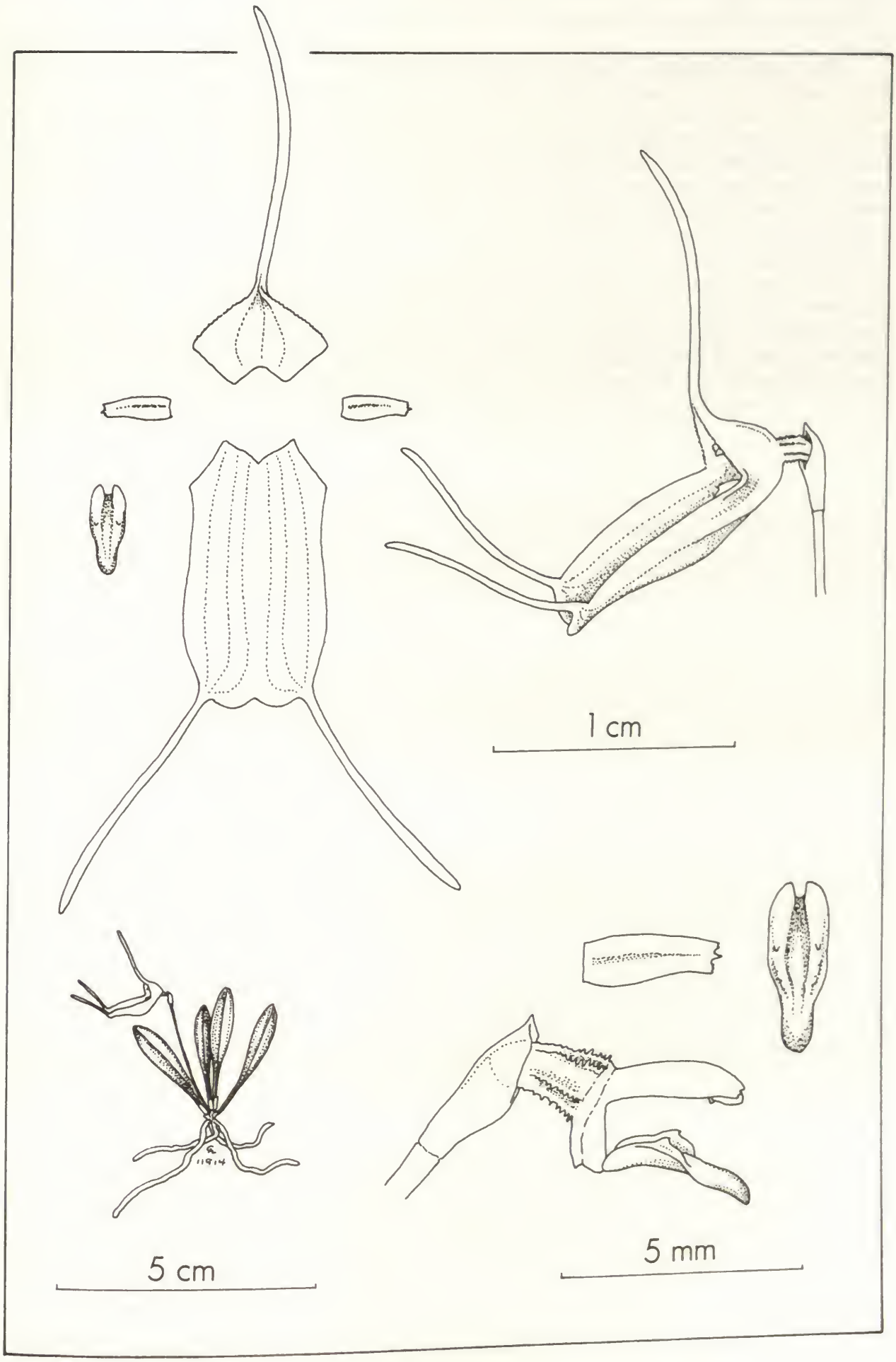


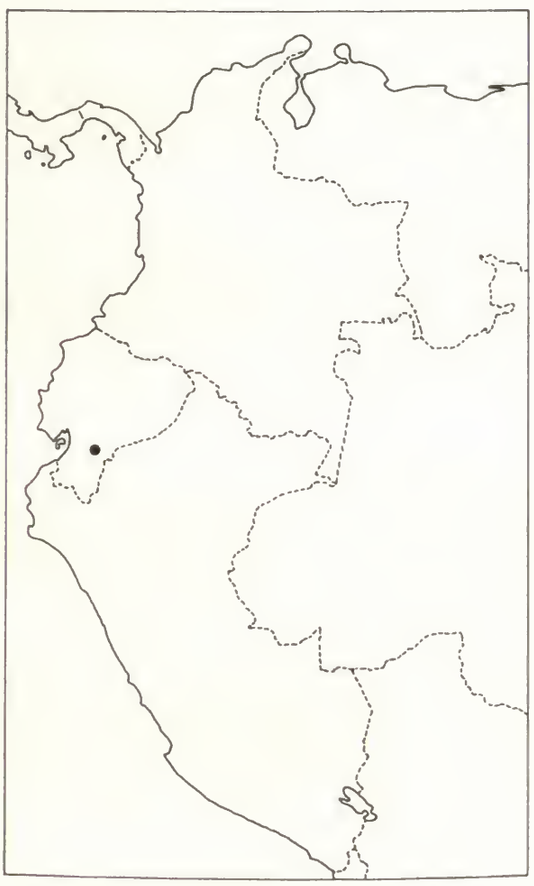
Plate 9. *Trisetella hirtzii* Luer

Trisetella hoeijeri Luer & Hirtz, Lindleyana 1: 192, 1986.

Ety.: Named in honor of Thomas Höijer of Jarfalla, Sweden, who first discovered this species.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls erect, 3-4 mm long, enclosed by 2-3 loose, ribbed, tubular sheaths. **Leaf** erect, coriaceous, narrowly linear, acute, 20-27 mm long, 2-2.5 mm wide. **Inflorescence** a succession of single flowers borne in a congested raceme by a very slender, smooth, suberect peduncle 4-6 cm long, with a bract near the base, from low on the ramicaul; floral bracts 3 mm long; pedicel 2 mm long; ovary 1.5 mm long, the ribs minutely erose; **sepals** glabrous, crystalline silvery-white, the dorsal sepal ovate, concave, 4 mm long, 4 mm wide, connate to the lateral sepals for 1 mm to form a gaping, sepaline cup, the acute free portion contracted into an erect, slender, white tail 20 mm long, the lateral sepals with 3 thin, red, longitudinal veins, oblong, spreading, ca. 15 mm long, 3 mm wide, connate basally for 2 mm, the acute apex contracted into a slender, white tail nearly as long, the total length of the lateral sepal 28 mm; **petals** translucent white with purple suffusion medially, oblong, 2 mm long, 0.8 mm wide, the truncate apex erose with an acute apiculum; **lip** white, flecked with red, suffused with red at the apex, oblong-ovate, 2.8 mm long, 1.2 mm wide, the apex obtuse, thickened, the disc with a low pair of longitudinal calli below, channeled centrally, the base cordate-cleft, hinged to the keel-like apex of the column-foot; **column** white. suffused with purple, semiterete, 2 mm long, the foot 1 mm long.

ECUADOR: Prov. of Morona-Santiago: epiphytic in cloud forest north of Gualaquiza, alt. 1800 m, 17 Feb. 1986, *C. Luer, J. Luer, A. Embree, A. Hirtz & W. Flores 11979* (Holotype: MO); same area, Jan. 1986, *S. Dalström & T. Höijer 1126* (MO).



This spectacular little species was first discovered by the team of Höijer and Dalström in a remote cloud forest above a tiny village north of Gualaquiza in the Oriente of Ecuador. Although in habit not unlike many of the other species of the genus, the flower of *T. hoeijeri* is unique. The lateral sepals are oblong, free and widely spread, and the color is silvery white with three thin, red lines on each. The habit of a flowering plant is reminiscent of *Masdevallia picturata* Rchb. f.

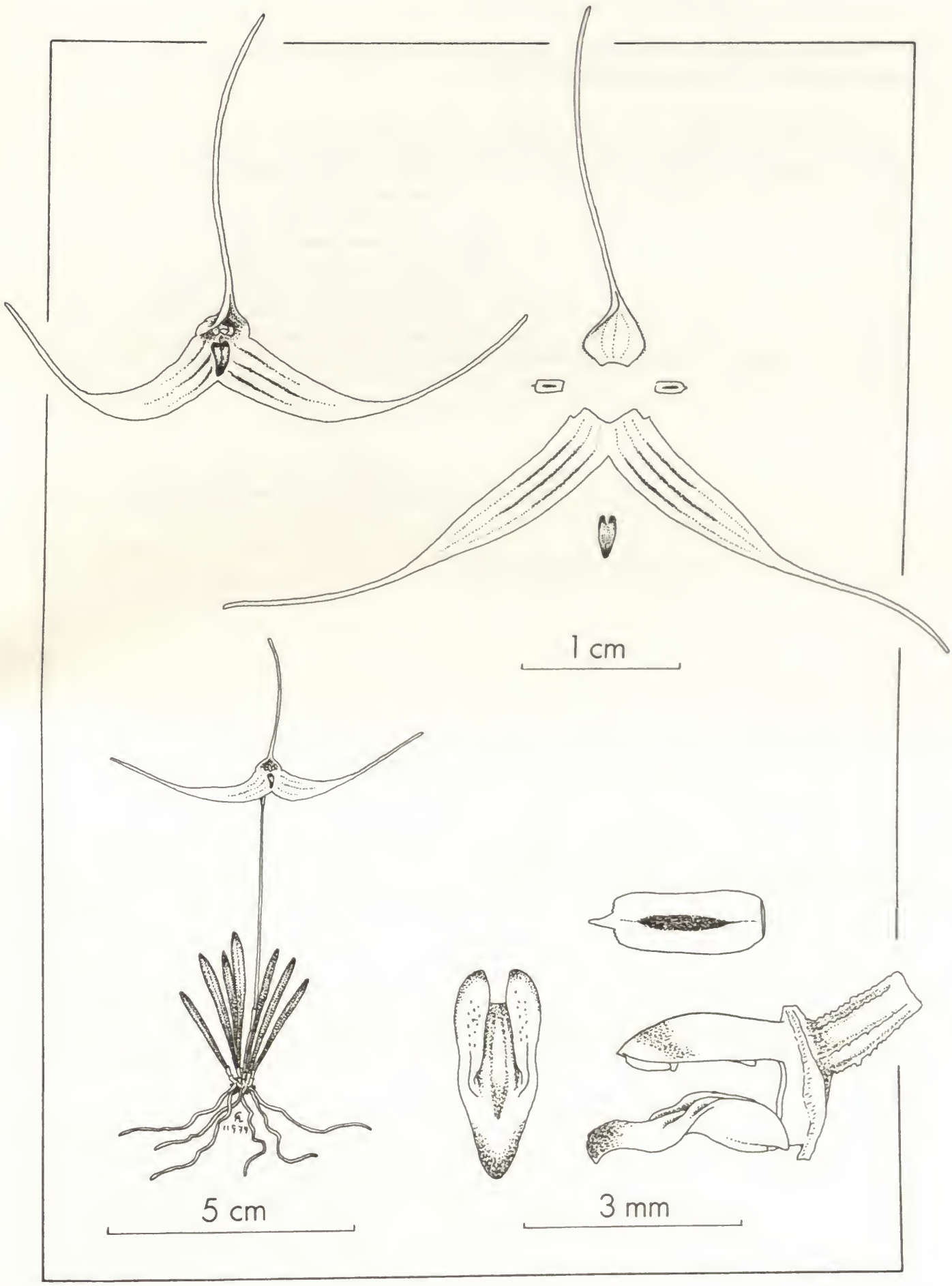


Plate 10. *Trisetella hoeijeri* Luer

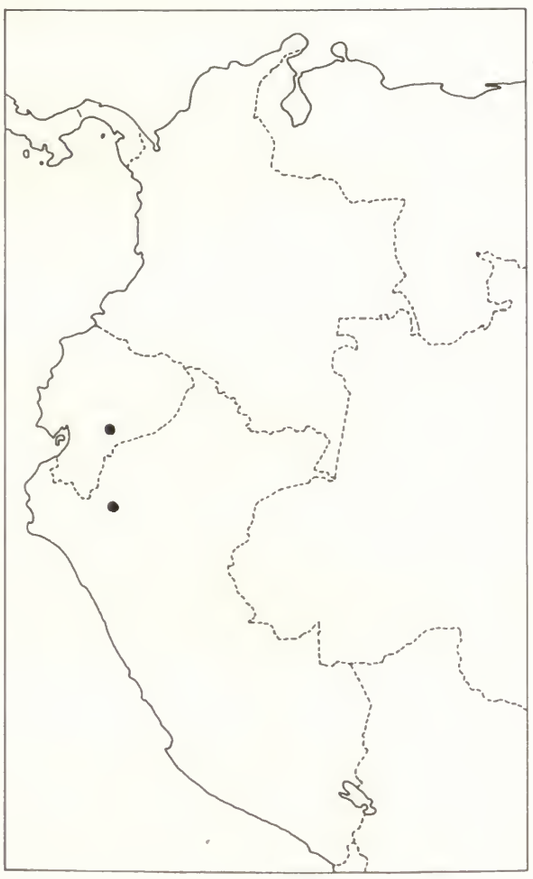
Trisetella nodulifera Luer & Hirtz, sp. nov.

Ety.: From the Latin *nodulifer*, "bearing a nodule," in reference to the apex of the lip.

Inter species generis *Trisetellae* Luer species haec pedunculo glabro, sepalorum caudis longi-capillaribus et labello apice nodulifero differt.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls 3-5 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, semiterete, channeled, narrowly elliptical to linear, acute, 2.5-4 cm long, 2-2.5 mm wide. **Inflorescence** a successively few-flowered, congested raceme borne by a slender, smooth, erect peduncle 4-6 cm long, with a bract below the middle, from low on the ramicaul; floral bracts 3-4 mm long; pedicel 5 mm long; ovary 1.5-2 mm long, lightly verrucose; **dorsal sepal** yellow, suffused with tan, microscopically ciliate on the margins, transversely ovate, concave, 4 mm long, 5-7 mm wide, connate to the lateral sepals for 2-2.5 mm to form a gaping, sepaline cup, the obtuse apex conduplicate, contracted into an erect, more or less reflexed, slender, terete, yellowish tail 20-25 mm long; **lateral sepals** red-brown, connate into an oblong, acute, longitudinally concave or boat-shaped lamina 19-21 mm long, 6-9 mm wide expanded, the apices contracted laterally, 3 mm below the apex into subapical, slender tails 12-15 mm long; **petals** translucent greenish white with a purple midvein, oblong, 2.5-3 mm long, 1-1.5 mm wide, the apex truncate, apiculate; **lip** red, or white suffused with red, subpandurate, 3-4 mm long, 1.5 mm wide, the apex rounded with a prominent nodule on the dorsum, the disc with a low pair of longitudinal calli, channeled between, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** green, semiterete, 3-3.5 mm long, the foot 1 mm long.

ECUADOR: Prov. of Morona-Santiago: Cordilleramm del Cutucú, epiphytic along the new road east of Mendez to Morona, alt. 900 m, 19 Jan. 1989, *A. Hirtz, A. Andreetta & S. Ortega 4120* (Holotype: MO), C. Luer illustr. 14367.
PERU: Dept. of Amazonas: B. Würstle 1342, flowered in cultivation in Spielberg, 13 Sept. 1982, *C. Luer 8139* (SEL).



In appearance this species is similar to *Trisetella triaristella* with large flowers with long, slender, tails, but the peduncle is smooth instead of verrucose. The most distinguishing feature is the subpanduriform lip with a conspicuous, rounded callus on the center of the rounded apex.

This species is known from southeastern Ecuador in the Cordillera del Cutucú and Amazonian Peru.

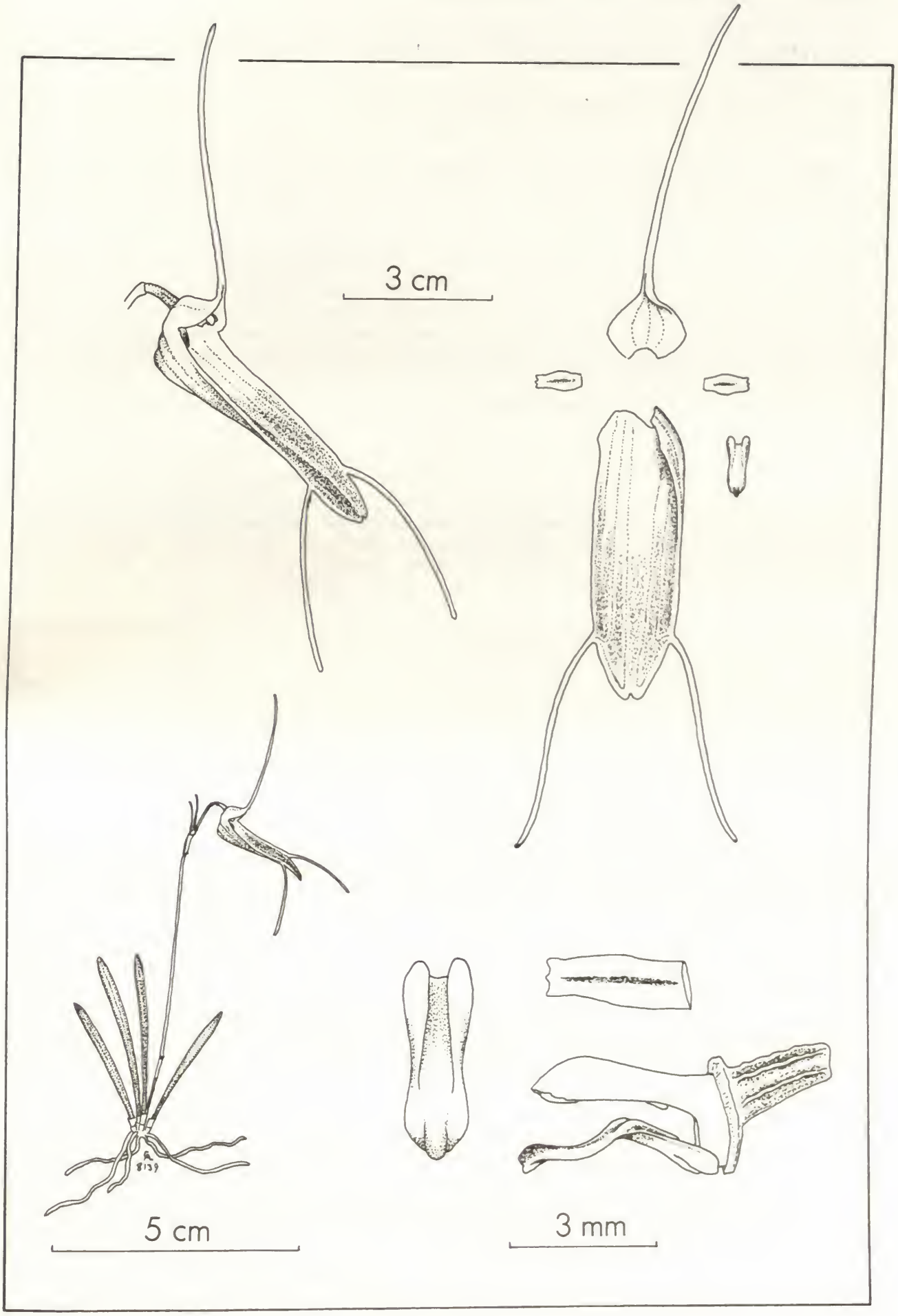


Plate 11. *Trisetella nodulifera* Luer & Hirtz

Trisetella pantex (Luer) Luer, Phytologia 47: 57, 1980.

Bas.: *Masdevallia pantex* Luer, Phytologia 39: 218, 1978.

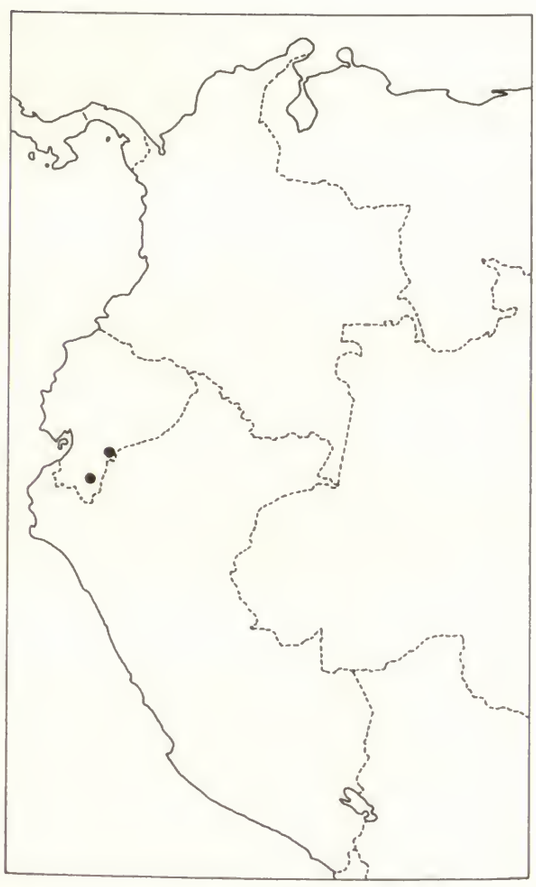
Ety.: From the Latin *pantex*, "a paunch," in allusion to the protruding, belly-like synsepal.

Syn.: *Triaristella pantex* (Luer) Luer, Selbyana 2: 206, 1978.

Syn.: *Triaristellina pantex* (Luer) Rauschert, Repert. Spec. Nov. Regni Veg. 94:459, 1983.

Plant very small, epiphytic, densely caespitose; roots slender. Ramicauls 2-3 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, linear to narrowly obovate, semiterete, acute to subacute, 1.5-3 cm long, 2-3 mm wide, dark green, mottled with purple on the back. **Inflorescence** a succession of single flowers borne in a congested raceme by a slender, minutely subverrucose, erect to suberect peduncle 2-3.5 cm long, with a bract near the middle, from low on the ramicaul; floral bracts 2-3 mm long; pedicel 3-5 mm long; ovary 1.5 mm long, subverrucose; **dorsal sepal** yellow, mottled with purple, minutely ciliate on the margins, transversely obovate, concave, 4 mm long, 6 mm wide, connate to the lateral sepals for 3.5 mm to form a widely patent, saccate, sepaline cup, the transversely obtuse apex conduplicate, abruptly contracted into an erect, stout, more or less thickened, yellow tail 7 mm long; **lateral sepals** purple, connate 7 mm into an oblong synsepal, deeply concave below the middle, convex above the middle, 9 mm long, 7 mm wide, the rounded apices contracted laterally below the apex into subapical, stout tails 3 mm long, the mentum broad, saccate, below the middle; **petals** yellow, suffused with rose near the middle, oblong, 3 mm long, 1 mm wide, the truncate apex erose with a short apiculum; **lip** dark deep rose, ovate, 3 mm long, 1.5 mm wide, the apex narrowly obtuse, thickened, the disc with a low pair of longitudinal, bluntly toothed calli, convex centrally, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** green, suffused with rose, semiterete, 3 mm long, the foot 1.5 mm long.

ECUADOR: Prov. of Zamora-Chinchipe: epiphytic in cloud forest above Valladolid, alt. 2600 m, collected July 1975 by W. Teague, L. Figueroa & D. Welisch, flowered in cultivation by M. & O. Robledo at La Ceja, Colombia, 27 Sept. 1977, *C. Luer 1854* (Holotype: SEL; Isotype : JAUM); above Valladolid, alt. 2000 m, 18 Mar. 1984, *C. Luer, S. Dalström, T. Höijer, D. D'Alessandro & J. Kuijt 9600* (MO); cloud forest, Cordillera del Condor, alt. 1450 m, 19 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11931* (MO).



This floriferous little species is widely distributed but local in the moist forests of southern Ecuador where it was first collected by Walter Teague and companions. It is easily identified by the broad sepals forming a widely gaping cup with the synsepal inflated, concave, and protruding behind. Above the middle (in the lower part of the flower) the synsepal bulges conspicuously forward, the two short tails emerging from the sides of the rounded apex. The low lamellae of the lip are provided with a few, blunt teeth.

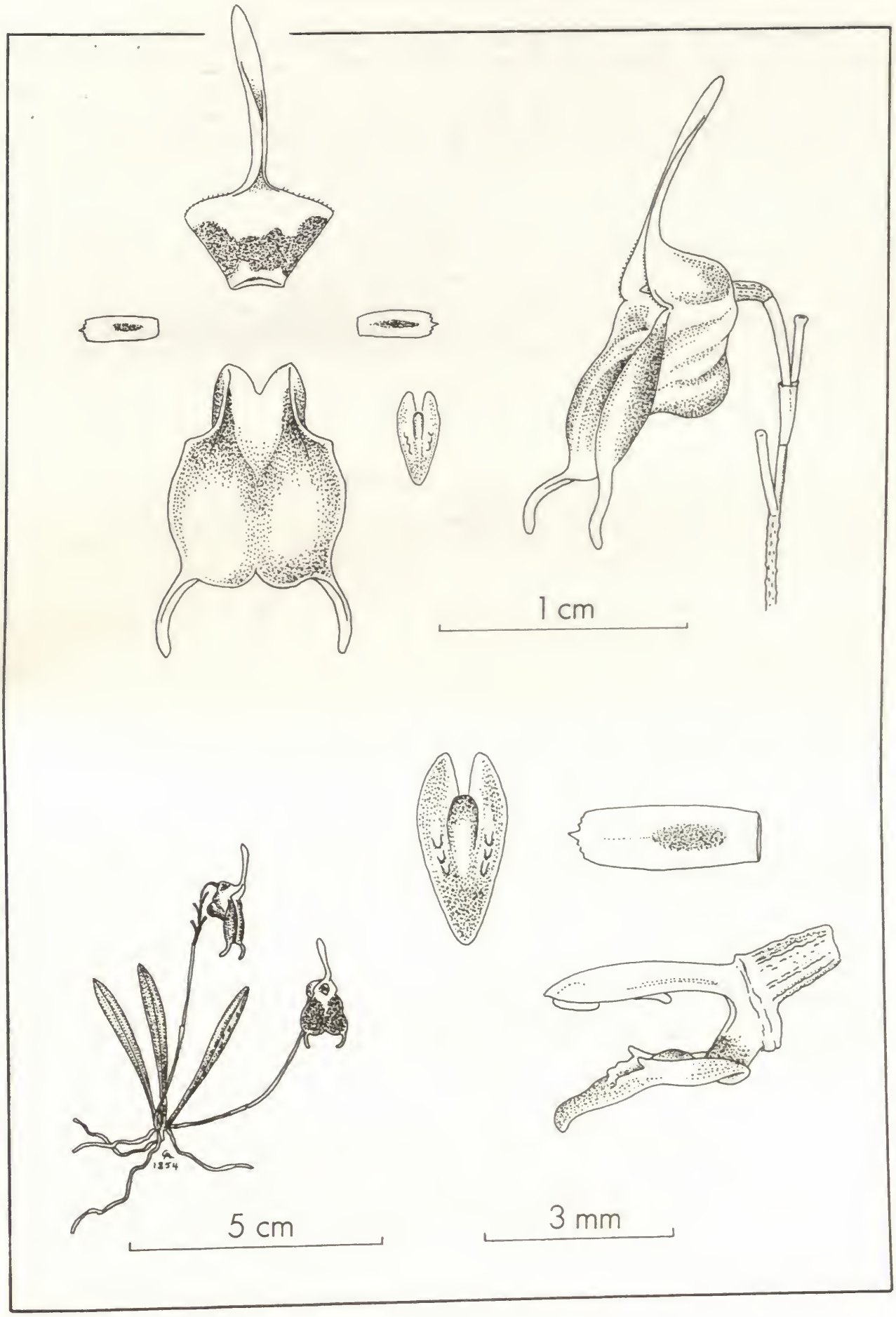


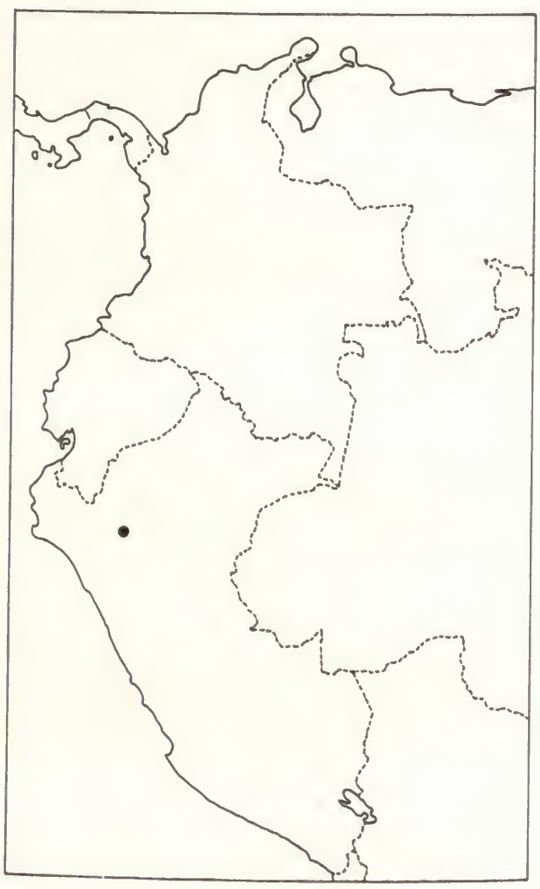
Plate 12. *Trisetella pantex* (Luer) Luer

Trisetella regia Königer, Selbyana 5: 296, 1981.

Ety.: From the Latin *regius*, "regal," in reference to the huge size of the flower.

Plant large in size for the genus, epiphytic, caespitose; roots slender. Ramicauls erect, 2-4 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, narrowly semiterete, lightly sulcate, acute, 3-7 cm long, 2-2.5 mm wide, dark green. **Inflorescence** a succession of single, large flowers borne in a congested raceme by a slender, erect, densely scabrous peduncle 15-20 cm long, with a bract below the middle, from low on the ramicaul; floral bracts thin, imbricating, 4-5 mm long; pedicel verrucose, 9-13 mm long; ovary verrucose, 4-5 mm long; **dorsal sepal** yellow, suffused with brown, ovate, concave, 5 mm long, 5 mm wide, 3-veined, connate to the lateral sepals for 1.5 mm to form a gaping, sepaline cup, the subacute apex contracted into an erect, slender, yellow tail 4-5 cm long; **lateral sepals** dark red-purple, minutely pubescent within, completely connate into an oblong lamina 40 mm long, 6 mm wide expanded, shallowly gibbous at the base, the apex narrowly obtuse, minutely retuse, the tails slender, 2.5 cm long, produced laterally 5 mm below the apex; **petals** translucent yellow-white with a purple midvein, more or less oblong, 4 mm long, 1 mm wide, 1.5 mm wide at the dilated base, the apex acute, shortly acuminate; **lip** purple, ovate, 4.5 mm long, 1.75 mm wide, the apex narrowly obtuse, thickened, the disc with a pair of longitudinal carinae and a smaller, central carina, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** light yellow green, semiterete, 4 mm long, the foot rose, 1.5 mm long.

PERU: Dept. of Amazonas: between Chachapoyas and Leimebamba, alt. 2500 m, August 1978, *W. Königer, H. Königer & B. Würstle K-7* (Holotype: SEL), C. Luer illustr. 5252.



Trisetella regia is indeed the king of the genus. It was discovered in northern Peru by W. Königer *et al.* From among very narrow, semiterete leaves, long, stiff, raspy peduncles bear a flower huge for the genus.

It is very closely allied to *T. scobina* from nearby southern Ecuador. The leaves of *T. regia* are longer and narrower, and the peduncles, sepals and tails are also longer, but otherwise essentially the same. The lip of *T. regia* has the usual pair of longitudinal calli, but they flank a single, central carina, instead of a small pair as in *T. scobina*.

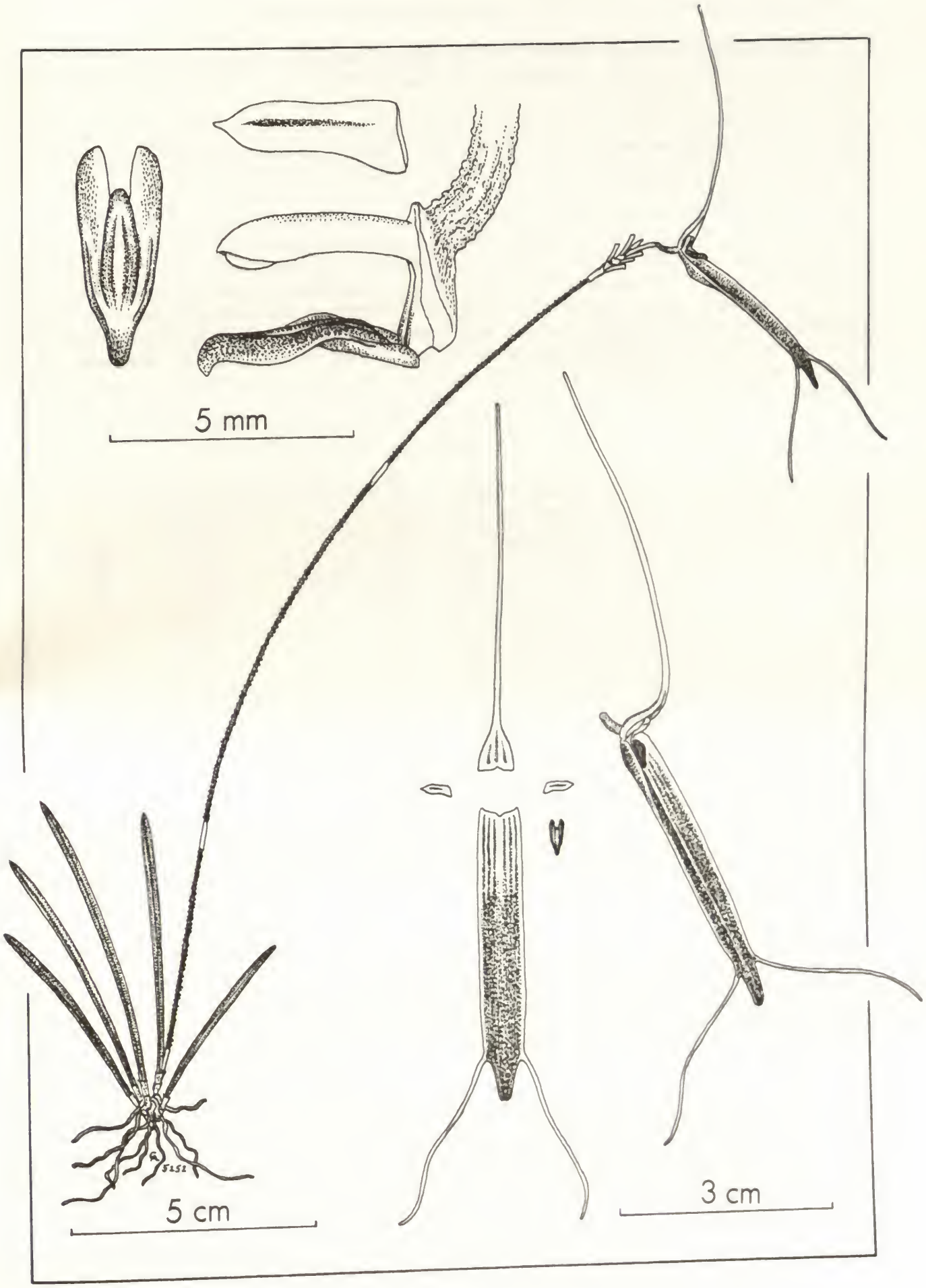


Plate 13. *Trisetella regia* Königer

Trisetella scobina Luer, Phytologia 47: 83, 1980.

Ety.: From the Latin *scobina*, "a file, or rasp," referring to the rough peduncle.

Plant medium to large in size for the genus, epiphytic, caespitose; roots slender. Ramicauls erect, 2-4 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect to suberect, thickly coriaceous, narrowly linear, semiterete, acute, 2-5 cm long, 2-3 mm wide, dark green, often spotted with purple beneath. **Inflorescence** a succession of single, large flowers borne in a congested raceme by a slender, erect, densely scabrous peduncle 9-16 cm long, with a bract below the middle, from low on the ramicaul; floral bracts thin, imbricating, 4-5 mm long; pedicel 5-7 mm long; ovary 3.5 mm long, verrucose; **dorsal sepal** yellow, suffused with brown, subverrucose externally, ovate, concave, 5 mm long, 4 mm wide, 3-veined, connate to the lateral sepals for 1.5 mm to form a gaping, sepaline cup, the subacute apex contracted into an erect, slender, yellow tail 25-45 mm long; **lateral sepals** red-purple to purple-brown, more or less with yellow margins, minutely pubescent within, connate completely into an oblong lamina 25-35 mm long, 5-8 mm wide expanded, shallowly gibbous at the base, the apex obtuse, retuse, the tails slender, 12-25 mm long, produced laterally 4 mm below the apex; **petals** translucent yellow-white, more or less oblong, 4 mm long, 1.5 mm wide, the subacute apex more or less minutely serrulate; **lip** purple, ovate, 4.5 mm long, 1.5 mm wide, the apex obtuse, thickened, the disc with a pair of longitudinal carinae flanking a second shorter pair in the middle, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** light green, semiterete, 4 mm long, the foot 1.5 mm long.

ECUADOR: Prov. of Morona-Santiago: epiphytic in cloud forest east of Paute, alt. ca. 2000 m, collected by B. Malo, flowered in cultivation at Tarqui near Cuenca, 27 Sept. 1980, *C. Luer 5569* (Holotype: SEL); Valle del Paute, alt. 2200 m, collected by A. Andreetta & M. Portilla, flowered in cultivation at Paute, 24 May 1988, *C. Luer 13655* (MO). Prov. of Zamora-Chinchipe: wet forest along Río Zamora, alt. 800-1200 m, 1888, *F. C. Lehmann* 7010 (K); epiphytic in trees along Río Zamora west of Zamora, alt. 1500 m, 20 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11978* (MO); epiphytic along the new road between Loja and Zamora, alt. 1500 m, 3 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12599* (MO).
BOLIVIA: Dept. of La Paz: Prov. of Murillo, valley of Río Zongo, alt. 1400-1600 m, 22 Apr. 1982, *J. C. Solomon 7498* (MO, SEL).

Consul Lehmann made a watercolor painting, now at Kew, of this handsome plant from Ecuador in the last century. Apparently it was not accompanied by an herbarium specimen. In 1980, it was described as *Trisetella scobina*.

Trisetella scobina is very similar to *T. triarisetella*, which is widely distributed from Central America to southern Ecuador, differing in the usually longer, stiff, markedly scabrous peduncle; flowers with a longer, narrower synsepal; and a lip with a central pair of smaller carinae in addition to the usual pair. *Trisetella scobina* is frequent in southeastern Ecuador, and it has also been found in Bolivia. It is very closely allied to the Peruvian *T. regia*, which has a single, central carina between the usual pair. Undoubtedly *T. scobina* occurs also in Peru.

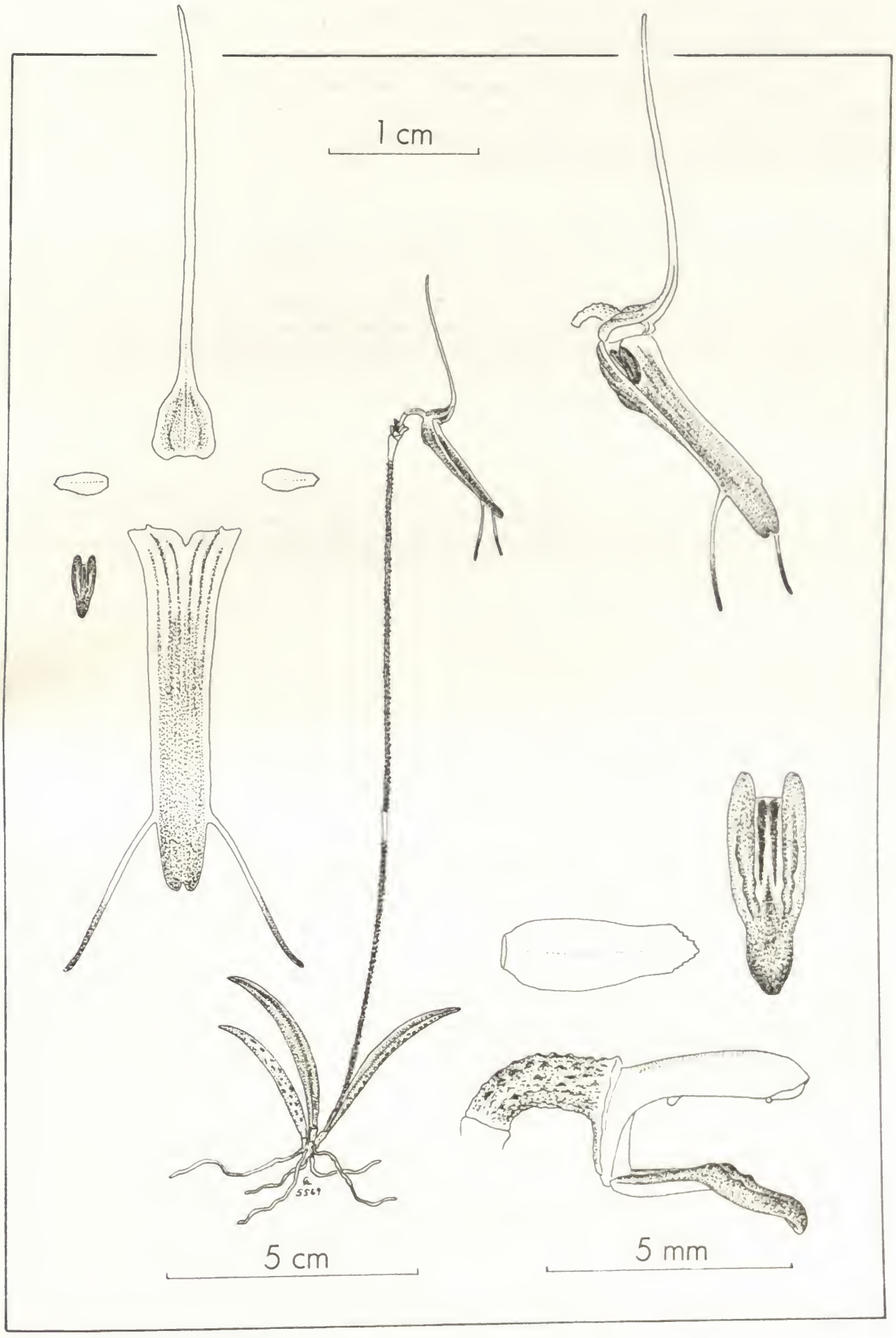


Plate 14. *Trisetella scobina* Luer

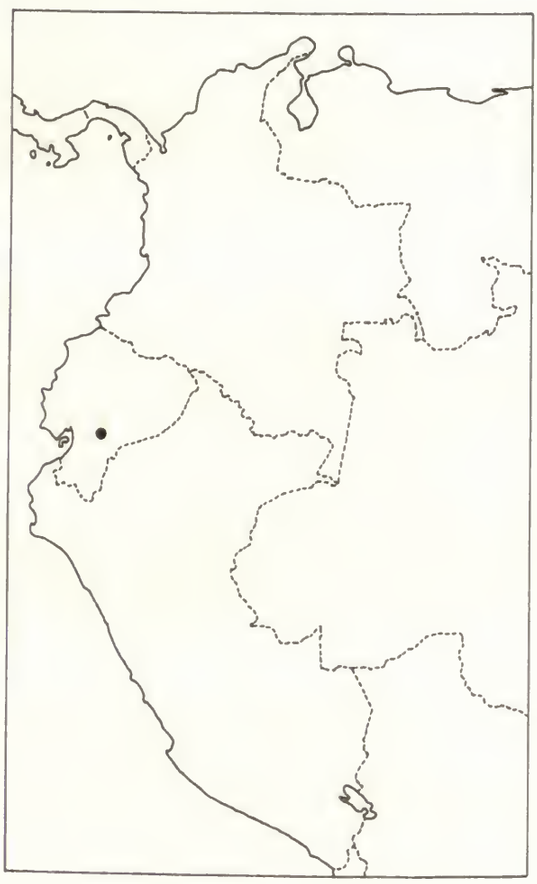
Trisetella sororia Luer & Andreetta, sp. nov.

Ety.: From the Latin *sororius*, "like a sister," referring to the close relationship of this species to others in the genus.

Inter species generis *Trisetellae* Luer species haec pedunculo glabro plurifloro foliis angustissimis longiore, sepalo dorsali transverse ovato cum cauda brevi crassa clavata, synsepalo oblongo concavo cum caudis brevibus crassis infra apicibus, petalis ellipticis tridentatis, labello ovato bicarinato distinguitur.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, 6-11 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly linear-terete, acute, the base epetiolate, 3-4.5 cm long, 2 mm wide. **Inflorescence** a succession of single flowers borne in a congested several-flowered raceme by a slender, erect, smooth peduncle 5-6 cm long, with a bract near the base, from low on the ramicaul; floral bracts 3 mm long; pedicel 4-5 mm long; ovary 2 mm long, verrucose; **dorsal sepal** yellow-orange, microscopically ciliate along the free margins, transversely ovate, concave, 4.5-5 mm long, 6 mm wide, connate to the lateral sepals for 2.5 mm to form a sepaline cup, the transversely obtuse apex contracted into an erect, clavate tail 5 mm long; **lateral sepals** purple, microscopically cellular-glandular, connate 9 mm into a deeply concave, oblong, obtuse lamina 9 mm long, 6 mm wide expanded, with a broad mentum below the middle, the tails produced laterally, below and 2 mm from the apex, the tails yellow-orange, stout, subclavate, 4 mm long; **petals** translucent yellow, elliptical, 2.5 mm long, 1 mm wide, the apex truncate, tridentate; **lip** dark purple, ovate, 3.5 mm long, 1.5 mm wide, the apex narrowly obtuse, the disc with a low pair of longitudinal calli, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** green, semiterete, 3 mm long, the foot 1 mm long.

ECUADOR: Prov. of Morona-Santiago: Valle del Paute, alt. 2200 m, collected by A. Andreetta & M. Portilla, flowered in cultivation at Paute, 16 May 1988, *C. Luer 13381* (Holotype: MO).



This species is closely allied to the ubiquitous *T. triglochin* complex, but the general appearance varies so far from those taxa accepted in the complex, that I believe it should be recognized at the specific level.

The racemes produce at least seven flowers successively, those of *T. triglochin* produce only two or three. The ovary is verrucose; the sepals are short and broad with short, clavate tails. In common with *T. triglochin* are the terete leaves, smooth peduncles, and the petals, lip and column.

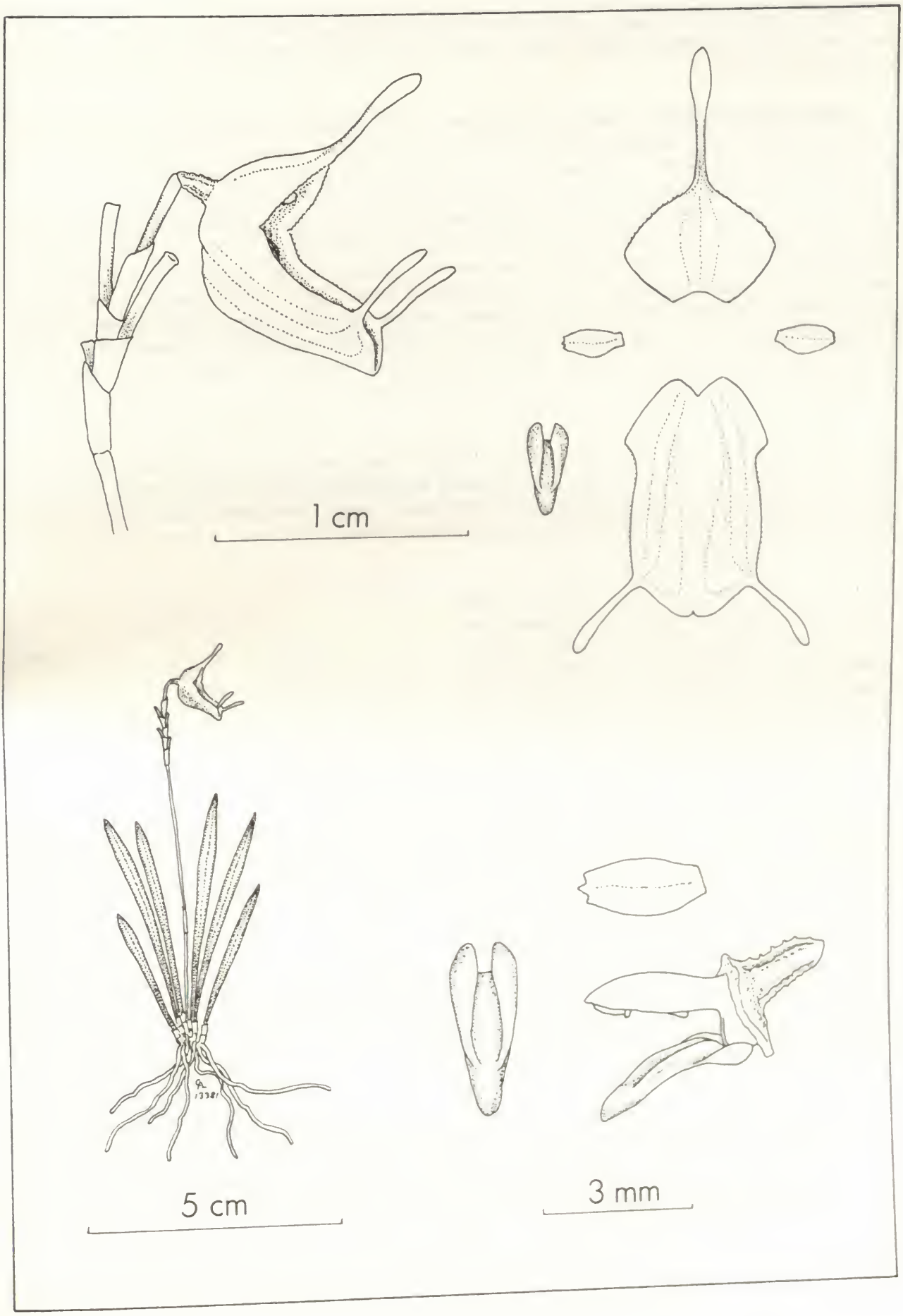


Plate 15. *Trisetella sororia* Luer & Andreetta

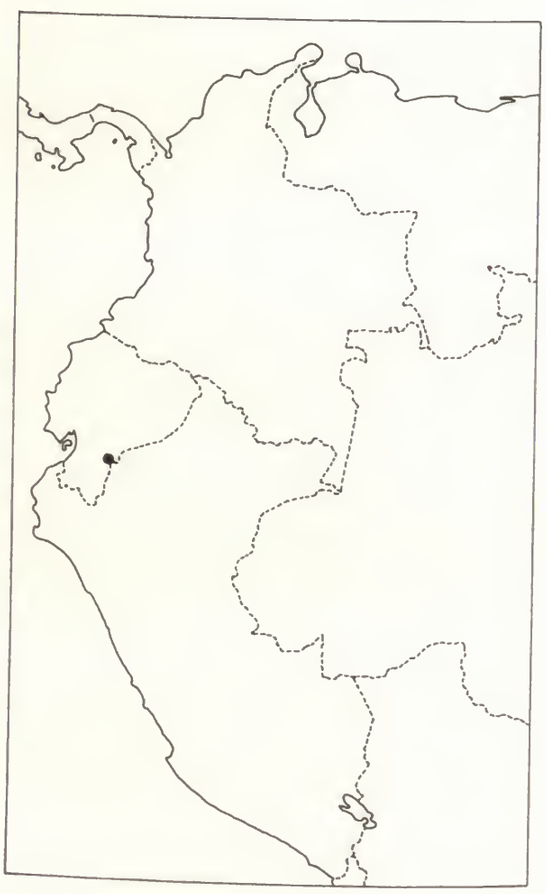
Trisetella strumosa Luer & Andreetta, sp. nov.

Ety.: From the Latin *strumosus*, "with a goiter," referring to the very large mentum.

Planta parva flore grandi, pedunculo scarbroso foliis crassis anguste linearibus longiore, ovario verrucoso, sepalis lateralibus in mentum profundum maxissimum connatis et sepalorum caudis clavatis.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls 3-7 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, fleshy, linear, semiterete, acute, 2.5-5 cm long, 1.5-2 mm wide. **Inflorescence** a succession of a few single flowers borne in a congested raceme by an erect, slender, verrucose peduncle 7-10 cm long, with a bract below the middle, from low on the ramicaul; floral bracts 3-4 mm long; pedicel 6-8 mm long; ovary 2.5 mm long, verrucose; **dorsal sepal** yellow-orange, minutely ciliate on the margins, transversely obovate, concave, 6 mm long, 9 mm wide expanded, connate to the lateral sepals for 4 mm to form a gaping, sepaline cup, the transversely obtuse apex conduplicate, abruptly contracted into a slender, erect, terete, clavate, yellow tail 12-15 mm long; **lateral sepals** yellow-orange, suffused with purple above the middle, minutely short-pubescent, 18-19 mm long, connate 23 mm around a large, retrorse, basal mentum 5-6 mm deep, into an ovate, acute synsepal, 10 mm wide expanded below, 5 mm expanded above, the apex acute, abruptly contracted laterally 4-5 mm below the apex into slender, clavate tails 10 mm long; **petals** translucent yellow, with a purple midvein, oblong, 3.5 mm long, 1 mm wide, the apex truncate-tridentate; **lip** red-brown, oblong-ovate, 4 mm long, 1.5 mm wide, the apex narrowly obtuse, the disc with a pair of tall, rounded, approximate, longitudinal calli centrally above the base, flanked to either side by another low, longitudinal callus, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** yellow, semiterete, 3.5 mm long, the foot channeled, 1.5 mm long.

ECUADOR: Prov. of Morona-Santiago: Cordillera del Condor, epiphytic in forest east of Chuchumbletza, alt. 1650 m, 21 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13534* (Holotype: MO; Isotypes K, QCNE); collected by A. Andreetta & M. Portilla, flowered in cultivation at Paute, 16 May 1988, *C. Luer 13380* (SEL).



Vegetatively this large-flowered species is very much like most of the other members of the genus. The long peduncle is scabrous except near the apex. The mentum of the synsepal is extraordinarily large, so large that it protrudes posteriorly. The sepaline tails are clavate. The petals and lip are not remarkably different from those of *T. triaristella* except for the pair of tall, central carinae.

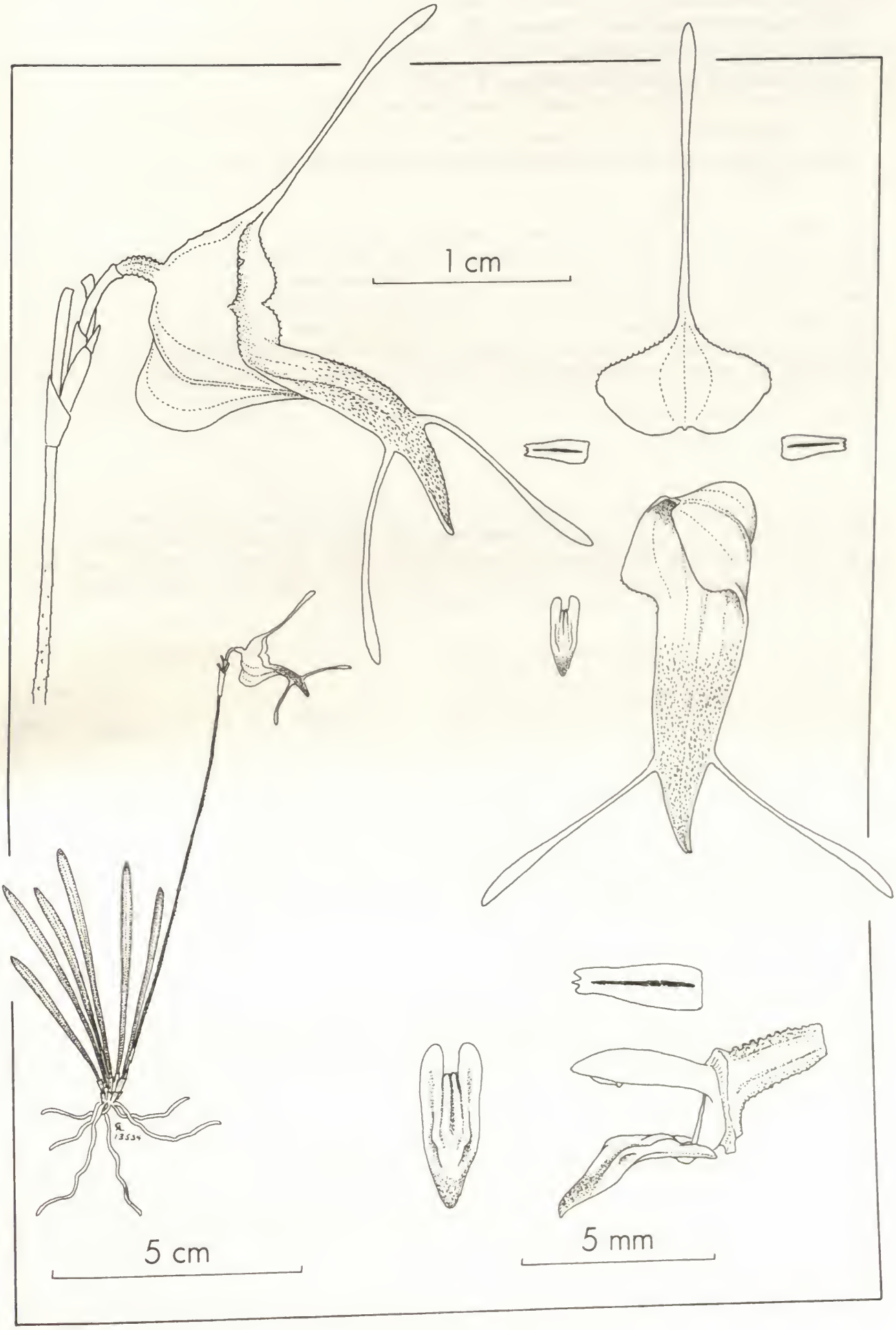


Plate 16. *Trisetella strumosa* Luer & Andreetta

Trisetella tenuissima (C. Schweinf.) Luer, Phytologia 47: 58, 1980.

Bas.: *Masdevallia tenuissima* C. Schweinf., Bot. Mus. Leafl. 4: 111, 1937.

Ety.: From the Latin *tenuissimus*, "very thin," referring to the leaves and flowers.

Syn.: *Masdevallia butcheri* Luer, Selbyana 3: 16, 1976.

Ety.: Named in honor of its discoverer, Henry Butcher, of Volcán, Chiriquí, Panama.

Syn.: *Triaristella tenuissima* (C. Schweinf.) Luer, Selbyana 2: 206, 1978.

Syn.: *Triaristellina tenuissima* (C. Schweinf.) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

Plant very small, epiphytic, densely caespitose; roots fine. Ramicauls erect, 1-2 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 10-17 mm long, 1.5-3 mm wide. **Inflorescence** a succession (3-5) of single flowers borne in a congested raceme by a filiform, erect, smooth peduncle 20-28 mm long, with a bract below the middle, from low on the ramicaul; floral bracts 1.5-2 mm long; pedicel 2-3 mm long; ovary 1 mm long, minutely verrucose; **dorsal sepal** yellow with 3 purple veins, with the margins minutely ciliate, transversely ovate, concave, 2.5 mm long, 3 mm wide, connate to the lateral sepals for 1 mm to form a sepaline cup, the rounded apex conduplicate, contracted into an erect, yellow-brown tail 3.5 mm long, thickened toward the apex; **lateral sepals** yellow-white with purple stripes along the veins, connate 4 mm into an oblong lamina 5 mm long, 2.25 mm wide, more or less flat without forming a mentum, the acute apices approximate, contracted into thick, yellow tails 2.5 mm long; **petals** translucent white with a purple midvein, oblong-ovate, 2 mm long, 0.6 mm wide, the truncate apex with an abrupt apiculum; **lip** red, narrowly ovate, 2.25 mm long, 0.75 mm wide, the apex white, obtuse, the disc with a low pair of longitudinal, subverrucose calli, channeled centrally, the base cordate-cleft, hinged to the short, compressed apex of the column-foot; **column** yellow, suffused with purple, semiterete, 1.75 mm long, the foot 1 mm long.

PANAMA: Prov. of Coclé: mountains beyond La Pintada, alt. 400-600 m, 17 Feb. 1935, *A. A. Hunter & P. H. Allen 587* (Holotype: MO); epiphytic in old orange trees above El Valle, alt. 900 m, 2 Sept. 1976, *C. Luer & H. Butcher 1119* (Type of *M. butcheri*: SEL). Prov. of Panama: Cerro Jefe, alt. 1000 m, 11 Sept. 1976, *R. L. Dressler s.n.* (SEL).
COLOMBIA: Dept. of Antioquia: Quebrada Tobaida, alt. 1200 m, collected by M. Robledo in 1983, flowered in cultivation at La Ceja, 9 Apr. 1988, *C. Luer 13087* (MO).

This little species is widely distributed but local from central Panama into the Western Cordillera of the Andes in Colombia. The little pale yellowish flower with short, thick tails is prominently striped with purple. Together the lateral sepals are not as wide as the dorsal sepal, and the tails are produced from the apices.

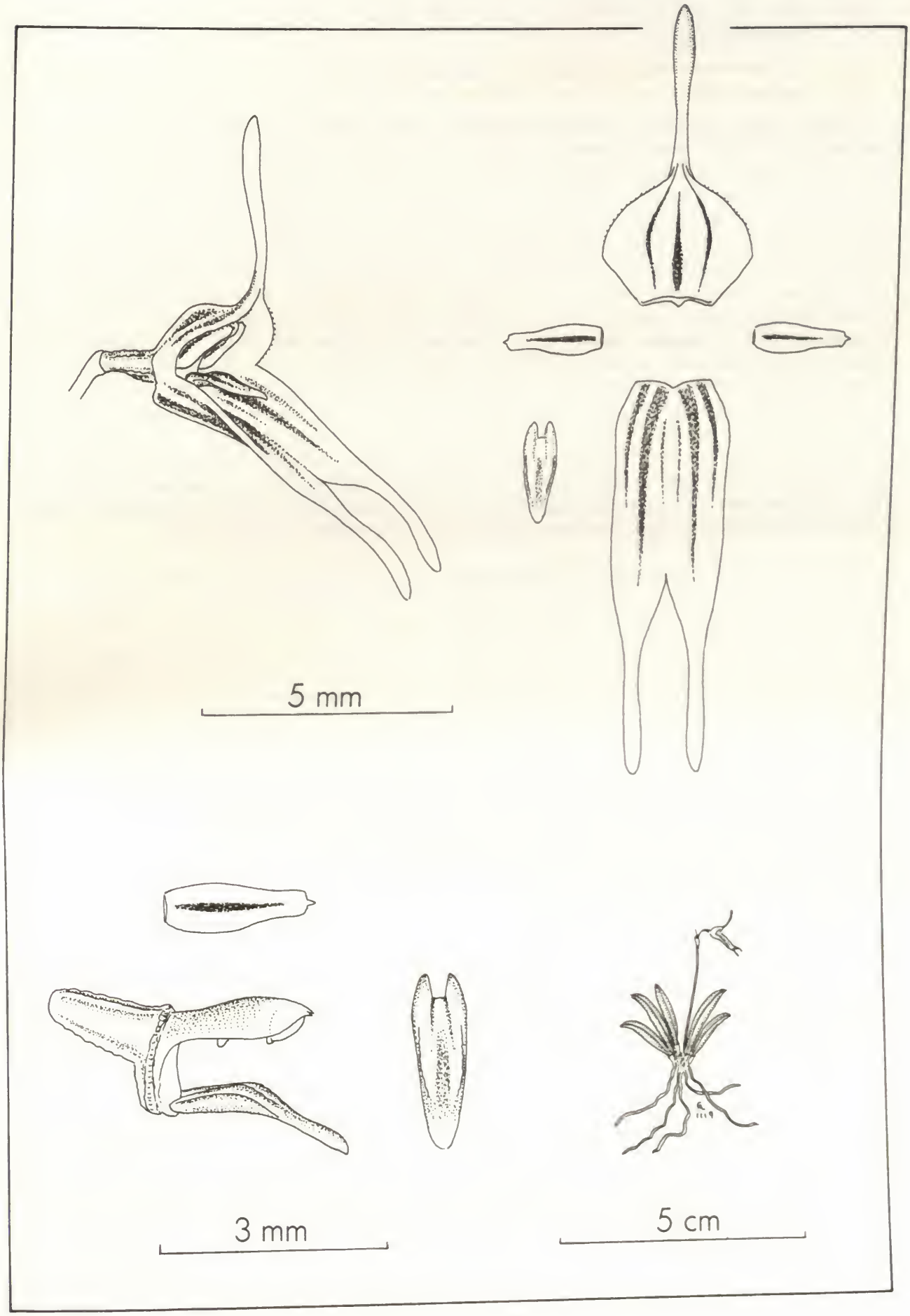


Plate 17. *Trisetella tenuissima* (C. Schweinf.) Luer

Trisetella triaristella (Rchb. f.) Luer, Phytologia 47: 58, 1980.

Bas.: *Masdevallia triaristella* Rchb. f., Gard. Chron. 6: 226, 1876.

Ety.: From the Latin *triaristella*, "three little awns," referring to the three aristate tails of the sepals.

Syn.: *Triaristella reichenbachii* Brieg., Die Orchidee 449, 1976.

Syn.: *Triaristellina triaristella* (Rchb. f.) Rauschert, Repert. Spec. Nov. Regni Veg. 94:459, 1983.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls 3-5 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, sometimes suffused and mottled with purple beneath, narrowly elliptical to linear, semiterete, sulcate, acute, 2.5-5 cm long, 2-2.5 mm wide. **Inflorescence** a succession of 2-5 single flowers borne in a congested raceme by a slender, verrucose, erect peduncle 4-8 cm long, with a bract below the middle, from low on the ramicaul; floral bracts 3-4 mm long; pedicel 4-7 mm long; ovary 2 mm long, verrucose; **dorsal sepal** yellow-orange, often suffused with purple, minutely ciliate on the margins, transversely ovate, concave, 3.5-4.5 mm long, 4-8 mm wide, connate to the lateral sepals for 1.5-2 mm to form a gaping, sepaline cup, the obtuse apex conduplicate, contracted into a slender, erect, terete, yellow to purple tail 18-27 mm long; **lateral sepals** purple, connate 14-18 mm into an oblong, acute to obtuse lamina 14-19 mm long, 6-7 mm wide, the apices contracted laterally below the apex into subapical, slender tails 16-21 mm long, concave below the middle into a broad, obtuse mentum; **petals** translucent yellow, suffused with purple medially along the midvein, elliptical, 2.5-3.5 mm long, 1.5 mm wide, the apex truncate-obtuse, with a minute apiculum; **lip** purple, oblong to ovate, 3.5-4 mm long, 1.2-2 mm wide, the apex obtuse to rounded, thickened, the disc with a low pair of longitudinal calli, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** yellow, suffused with purple, semiterete, 3.25-3.5 mm long, the foot 1.5 mm long.

COSTA RICA: without locality, *M. Endres 566* (Holotype: W). Prov. of Alajuela: Peñas, Blanca River Valley, Atlantic slope, alt. 900 m, 25 July 1986, *W. Haber et al. 5474* (MO); near San Ramón, alt. ca. 1200 m, 13 July 1983, *R. Escobar & K. Anderson 2781* (COL, CR, JAUM, SEL). Prov. of Heredia: Aguilar, Sarapiquí, alt. 700 m, 1960, *C. Horich 60-9-89* (MO). Prov. of Limón: Asunción, Río Segundo, alt. 600 m, 27 Apr. 1985, *L. D. Gómez & G. Herrera 23473* (MO).

PANAMA: Prov. of Veraguas: above Santa Fe, alt. ca. 700 m, 5 Sept. 1976, *C. Luer & R. Dressler 1149* (SEL).

COLOMBIA: without locality, flowered in cultivation by M. & O. Robledo at La Ceja, 13 Nov. 1977, *C. Luer 2190* (SEL).

ECUADOR: Prov. of Morona-Santiago: epiphytic in forest above the Paute dam-site, alt. 1700 m, collected by A. Andreetta, C. Luer, J. Luer et al., July 1977, flowered in cultivation by A. Andreetta in Cuenca, 6 Feb. 1978, *C. Luer 2466* (SEL).

Trisetella triaristella, the first of the species of the genus to be described, was imported in 1875 by Messrs. Veitch and sons of Chelsea, England, from their collector Endres in Costa Rica. Specimens were sent to Reichenbach who published the species the following year. Although this species is commonly thought as being Costa Rican, it is locally but widely distributed through Costa Rica, Panama, and the Andes . A very closely related robust species, *T. scobina*, occurs in southern Ecuador where these two taxa seem to intergrade.

Trisetella triaristella is variable in the length of the leaves, and in the lengths of the peduncle and sepaline tails. It is recognized by the very narrow leaves, a verrucose peduncle, long, slender, subapical tails of the lateral sepals about as long as or longer than the blade, and a broad, shallow mentum.

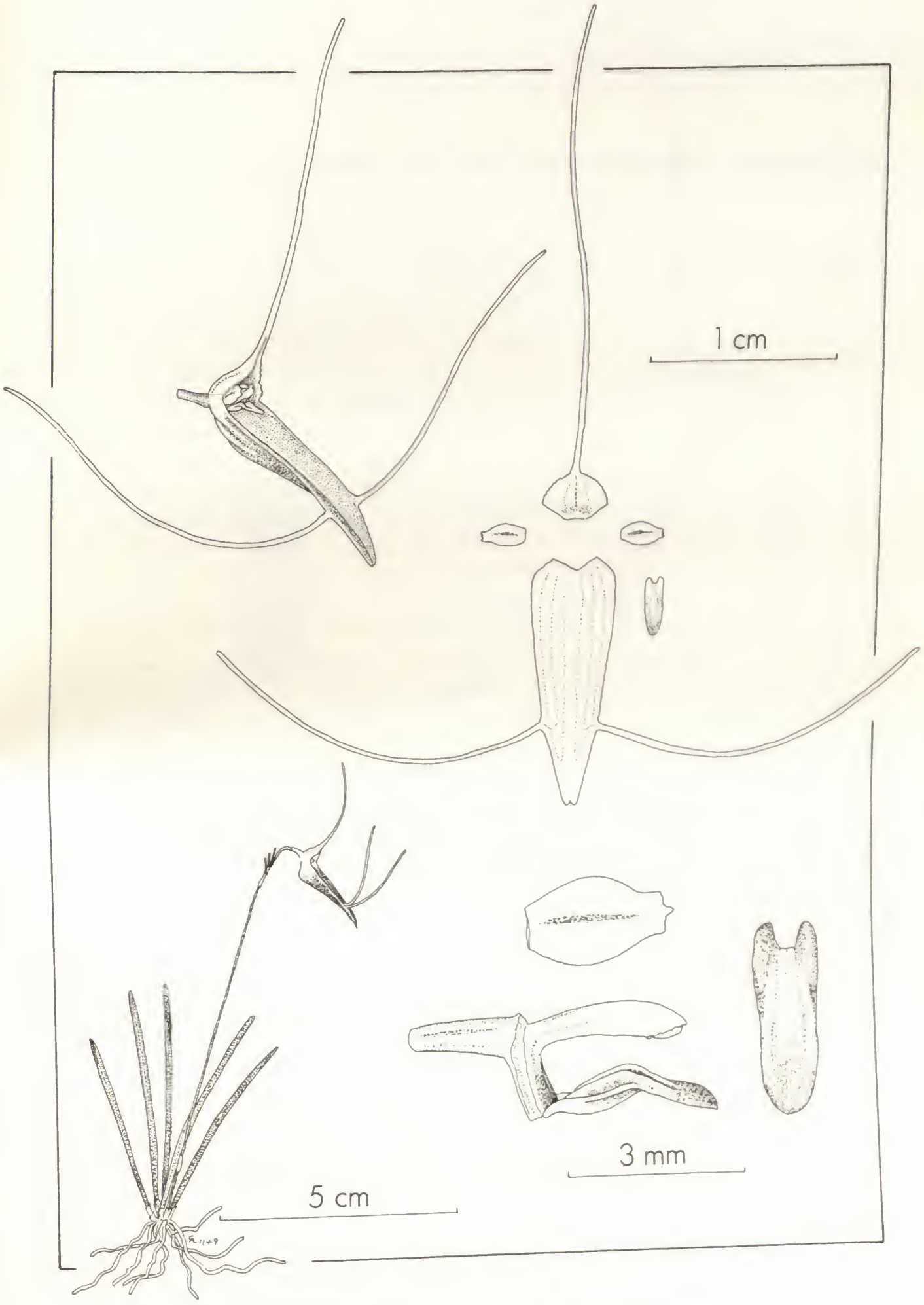


Plate 18. *Trisetella triaristella* (Rchb. f.) Luer

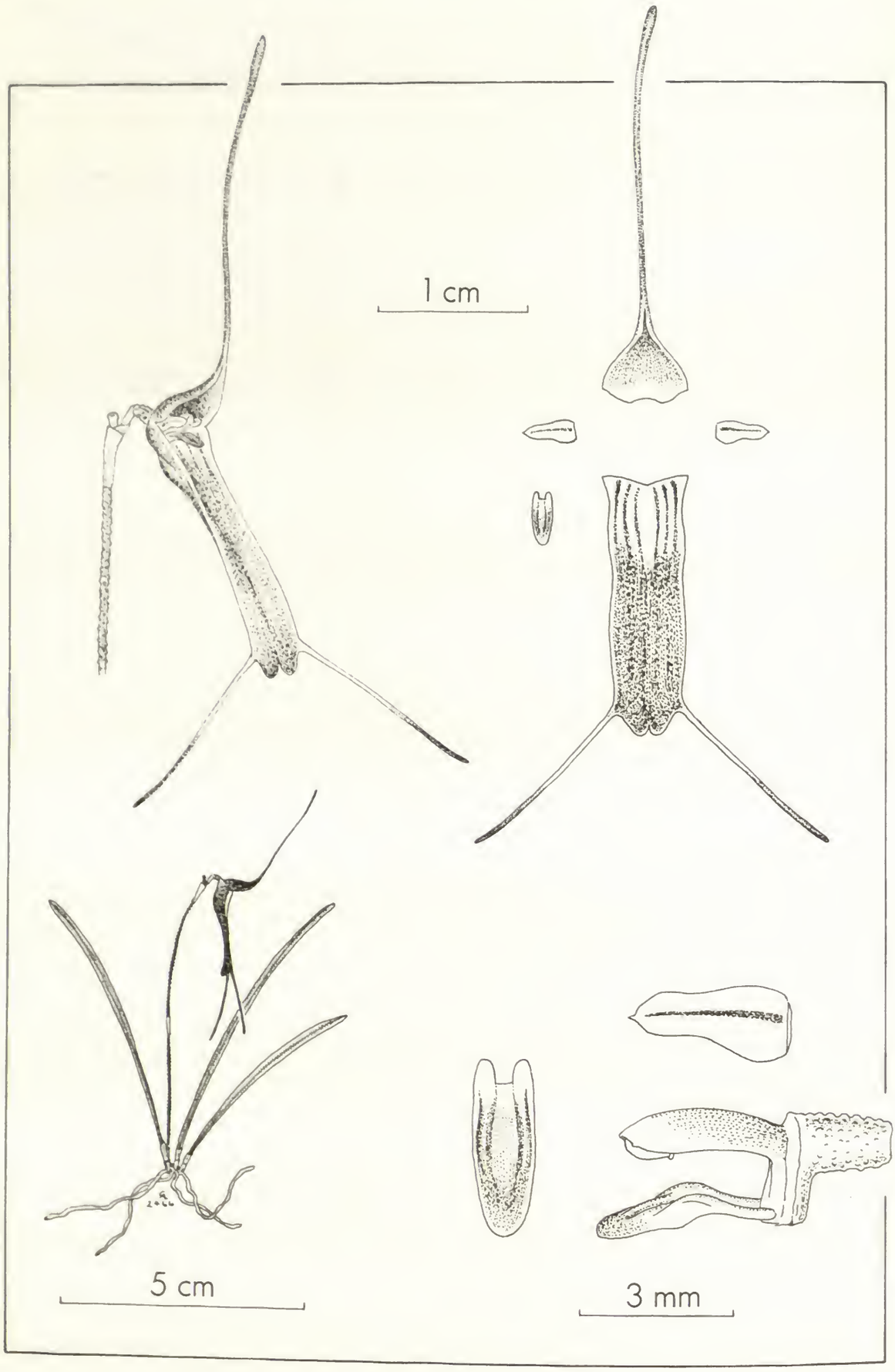


Plate 19. *Trisetella triaristella* (Rchb. f.) Luer

Trisetella triglochin (Rchb. f.) Luer, Phytologia 47: 58, 1980.

Bas.: *Masdevallia triglochin* Rchb. f., Gard. Chron. 2: 648, 1877.
Ety.: From the Latin *triglochin*, "with three barbs," in reference to the sepaline tails.

Syn.: *Masdevallia tripeta* Rchb. f., Gard. Chron. 2: 648, 1877, nomen nudum.
Ety.: Possibly a printer's error for *triseta*.

Syn.: *Masdevallia tridactylites* Rchb. f., Gard. Chron. 1: 784, 1883.
Ety.: From the Greek *tridactylos*, "with three fingers," referring to the three, clavate tails of the sepals.

Syn.: *Masdevallia trichaete* Rchb. f., Gard. Chron. 2: 360, 1883.
Ety.: From the Greek *trichaete*, "three hairs," referring to the slender sepaline tails.

Syn.: *Masdevallia triseta* Rchb. f. ex Krzl., Repert. Spec. Nov. Regni Veg. Beih. 34: 201, 1925.
Ety.: From the Latin *triseta*, "three awns," referring to the tails of the sepals.

Syn.: *Masdevallia huebneri* Schltr., Beih. Bot. Centralbl. 62(2): 88, 1925.
Ety.: Named in honor of its discoverer, Herr Hübner.

Syn.: *Masdevallia allenii* L. O. Wms., Ann. Missouri Bot. Gard. 27: 273, 1940.
Ety.: Named in honor of Paul H. Allen who collected the plant described.

Syn.: *Triaristella huebneri* (Schltr.) Luer, Selbyana 2: 205, 1978.

Syn.: *Triaristella trichaete* (Rchb. f.) Luer, Selbyana 2: 206, 1978.

Syn.: *Triaristella tridactylites* (Rchb. f.) Luer, Selbyana 2: 206, 1978.

Syn.: *Triaristella triglochin* (Rchb. f.) Luer, Selbyana 2: 206, 1978.

Syn.: *Trisetella huebneri* (Schltr.) Luer, Phytologia 47: 57, 1980.

Syn.: *Trisetella trichaete* (Rchb. f.) Luer, Phytologia 47: 58, 1980.

Syn.: *Trisetella tridactylites* (Rchb. f.) Luer, Phytologia 47: 58, 1980.

Syn.: *Triaristellina huebneri* (Schltr.) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

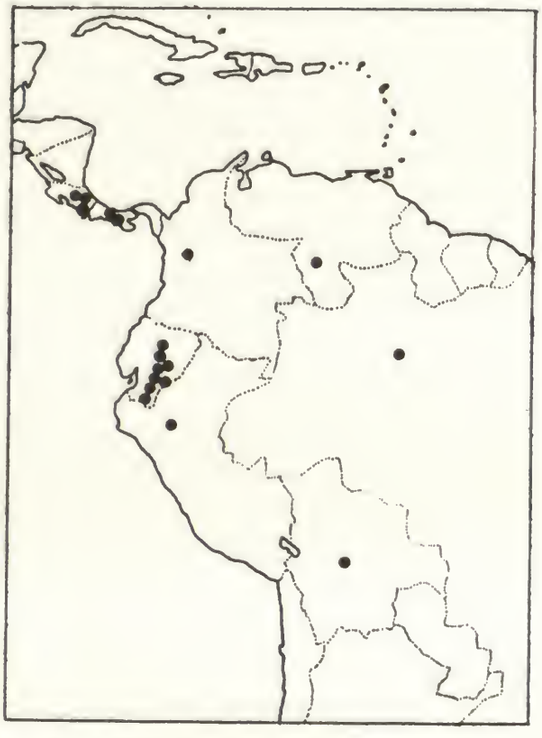
Syn.: *Triaristellina trichaete* (Rchb. f.) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

Syn.: *Triaristellina tridactylites* (Rchb. f.) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

Syn.: *Triaristellina triglochin* (Rchb. f.) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls 2-6 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, sometimes suffused and mottled with purple beneath, narrowly elliptical to linear, often semiterete, more or less sulcate, acute, 2-7 cm long, 1-4 mm wide. **Inflorescence** a successively few-flowered, congested raceme borne by a slender, smooth to slightly scabrous, erect to suberect peduncle 2-9 cm long, with a bract below the middle, from low on the ramicaul; floral bracts 2-4 mm long; pedicel 2-7 mm long; ovary 1.5-2 mm long, lightly verrucose; **dorsal sepal** yellow, yellow-orange, orange-brown, red-brown to purple, minutely ciliate or erose on the margins, transversely ovate, concave, 3-6 mm long, 4-6.5 mm wide, connate to the lateral sepals for 1.5-3 mm to form a gaping, sepaline cup, the obtuse apex conduplicate, contracted into an erect, slender, terete, sometimes thickened or clavate, yellowish tail 6-15 mm long; **lateral sepals** purple, red-brown to orange-brown, connate 8-20 mm into an oblong, acute to obtuse lamina 8-21 mm long, 5-11 mm wide expanded, the apices contracted laterally, usually below the apex into subapical, slender, terete, sometimes thickened or clavate tails 3-12 mm long, concave below the middle or above the base into a broad, obtuse mentum; **petals** translucent yellow, suffused with purple medially, oblong to oblong-ovate, 2-3.5 mm long, 0.5-1.25 mm wide, the apex truncate, erose to tridenticulate; **lip** purple, narrowly oblong-ovate, 2.5-4 mm long, 1-1.5 mm wide, the apex obtuse to rounded, thickened, the disc with a low pair of longitudinal calli, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** yellow, suffused with red or purple, semiterete, 2.5-4 mm long, the foot 1-2 mm long.

ECUADOR: Prov. of Pastaza: Río Pastaza and Río Topo, alt. 5500 ft., June 1877, *F. C. Lehmann 68* (Holotype: W); along Río Pastaza between Río Negro and Mera, alt. 1500 m, 28 Mar. 1984, *C. Luer, S. Dalström, T. Höijer & J. Kuijt 9777* (MO). Prov. of Morona-Santiago: alt. 1500 m, collected by B. Malo, flowered in cultivation at Tarqui near Cuenca, 20 July 1977, *C. Luer 1757* (SEL); below Paute, collected by A. Andreetta, flowered in cultivation in Cuenca, 28 Sept. 1980, *C. Luer 5577* (SEL); along Río Calagrás north of Gualaquiza, alt. 1650 m, 4 Nov. 1982, *C. Luer, R. Escobar & D. D'Alessandro 8286* (SEL); tall forest north of Macas, alt. 1050 m, 15 Jan. 1989, *C. Luer, J. Luer, P. Jesup, A. Jesup & A. Hirtz 13904* (MO). Prov. of Napo: north of Baeza, alt. 1500 m, 10 Aug. 1978, *C. Luer, J. Luer, A. Andreetta & A. Hirtz 3201* (MO, SEL). Prov. of Zamora-Chinchipe: between Loja and Zamora, alt. 1400 m, 29 Sept. 1961, *C. H. Dodson & L. Thien 813* (MO, SEL); above Valladolid, alt. 1900 m, *C. Luer, J.*



Luer, A. Hirtz & W. Flores 10844 (MO); Cordillera del Condor east of Paquisha, alt. 1200 m, 19 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11927* (MO).

COSTA RICA: without locality, June 1883, imported by *W. Lee s.n.* (type of *M. tridactylites*: W). Prov. of Alajuela: near San Ramón, 1875, *M. Endres 260* (W); same area, alt. ca. 1200 m, 13 July 1983, *R. Escobar & K. Anderson 2783* (CR, JAUM, SEL). Prov. of Cartago: near San Cristobal, alt. 1800 m, 22 June 1981, *C. Luer, A. Luer & L. D. Gómez 6369* (SEL); below Empalme, alt. ca. 1900 m, 14 Sept. 1979, *C. Luer, J. Luer & K. Walter 4825* (SEL). Prov. of Heredia: Vara Blanca, alt. 1860 m, Mar. 1938, *A. F. Skutch 3717* (K, MO).

PANAMA: Prov. of Coclé: vicinity of El Valle, alt. 600-1000 m, 8 Dec. 1938, *P. H. Allen 1230* (Type of *M. allenii*: MO). Prov. of Veraguas: above Santa Fe, alt. ca. 700 m, 5 Sept. 1976, *C. Luer & R. Dressler 1150* (SEL).

COLOMBIA: without locality, flowered in cultivation by M. & O. Robledo at La Ceja, 13 Nov. 1977, *C. Luer 2189* (SEL). Dept. of Antioquia: Munic. of Cocorná, lithophytic along a quebrada of Río Cocorná, alt. 1600 m, 24 Apr. 1983, *C. Luer et al. 8783* (SEL); same area, 20 Mar. 1989, *C. Luer, J. Luer, R. Escobar & W. Teague 14322* (MO).

VENEZUELA: T. F. Amazonas: Río Pasimoni, alt. 250 m, Sept. 1966, G. C. K. Dunsterville 9.

PERU: Dept. of Amazonas: W. Königer et al., flowered in cultivation in München, 3 Sept. 1982, *C. Luer 8128* (SEL). Dept. of Pasco: Oxapampa, headwaters of Río Tunqui, alt. 1800 m, Jan. 1984, *R. Foster et al. 7721* (MO).

BOLIVIA: Dept. of Cochabamba: Prov. of Chapare: forests near Villa Tunari, alt. 500 m, 23 Jan. 1980, *C. Luer, J. Luer & R. Vásquez 4932* (SEL). Dept. of Santa Cruz: near Santa Cruz, collected by Helen Kuhn, flowered in cultivation at J & L Orchids, Easton, CT., 13 Nov. 1977, *C. Luer 2191* (SEL).

BRAZIL: Edo. do Amazonas: Río Mocura, May, *G. Hübner 42* (Type of *M. huebneri*: B?); near Sâo Gabriel de Cachoeira, 21 Oct. 1978, *M. Madison, H. Kennedy, O. Monteiro & P. Braga 6555* (SEL).

The first description of a species attributable to this widely distributed and variable species-complex was that of *Masdevallia triglochin* by Reichenbach. It was the second species of the genus to be described. Reichenbach had already received herbarium specimens collected by F. C. Lehmann along the Río Pastaza in Ecuador when he was presented with a flowering plant from the same source by his friend Stuart Low in England.

Reichenbach described the peduncles of *T. triglochin* as merely "slender," but Woolward stated that they were "studded with minute asperities." Kränzlin described them as verrucose. However, an examination of the holotype at W (Vienna) reveals that the asperities are so slight that the peduncles could be called smooth. Plants collected at the type-locality today produce peduncles that vary from very slightly verrucose to smooth.

A few years later plants were imported by W. Lee of Downside, Leatherhead, England, possibly from Costa Rica. Reichenbach suggested that this species was the same as another he had from Costa Rica from Lehmann, and described it as *Masdevallia tridactylites*. He distinguished it (from the first two species, *M. triaristella* and *M. triglochin*) by the smooth peduncle and smaller flowers with "blunt" tails.

The tails of the sepals in the illustration of the type-specimen of *M. tridactylites* are clavate; those of *M. trichaete*, published soon thereafter and of

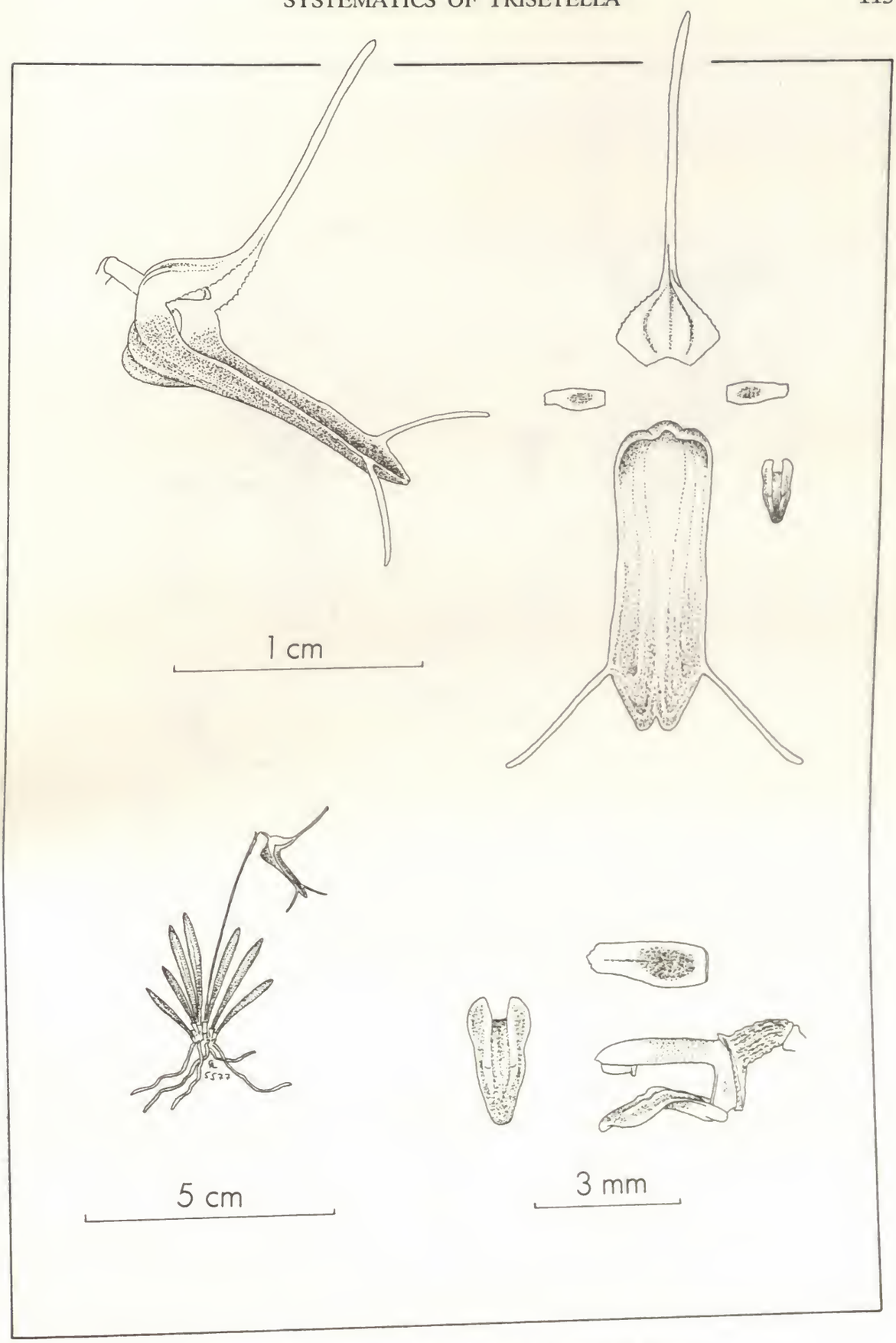


Plate 20. *Trisetella triglochin* (Rchb. f.) Luer

unknown origin, are slender and not clavate. The relative thickness of the tails, however, is variable throughout the range.

There is no specific difference, nor even a constant, trivial difference, among the numerous populations distributed through Central America and the Andes. Including the varying thicknesses of the tails, there is no significant difference in the Central American taxa described as *M. tridactylites* and *M. trichaete*, and populations of South American taxa described as *M. triglochin*

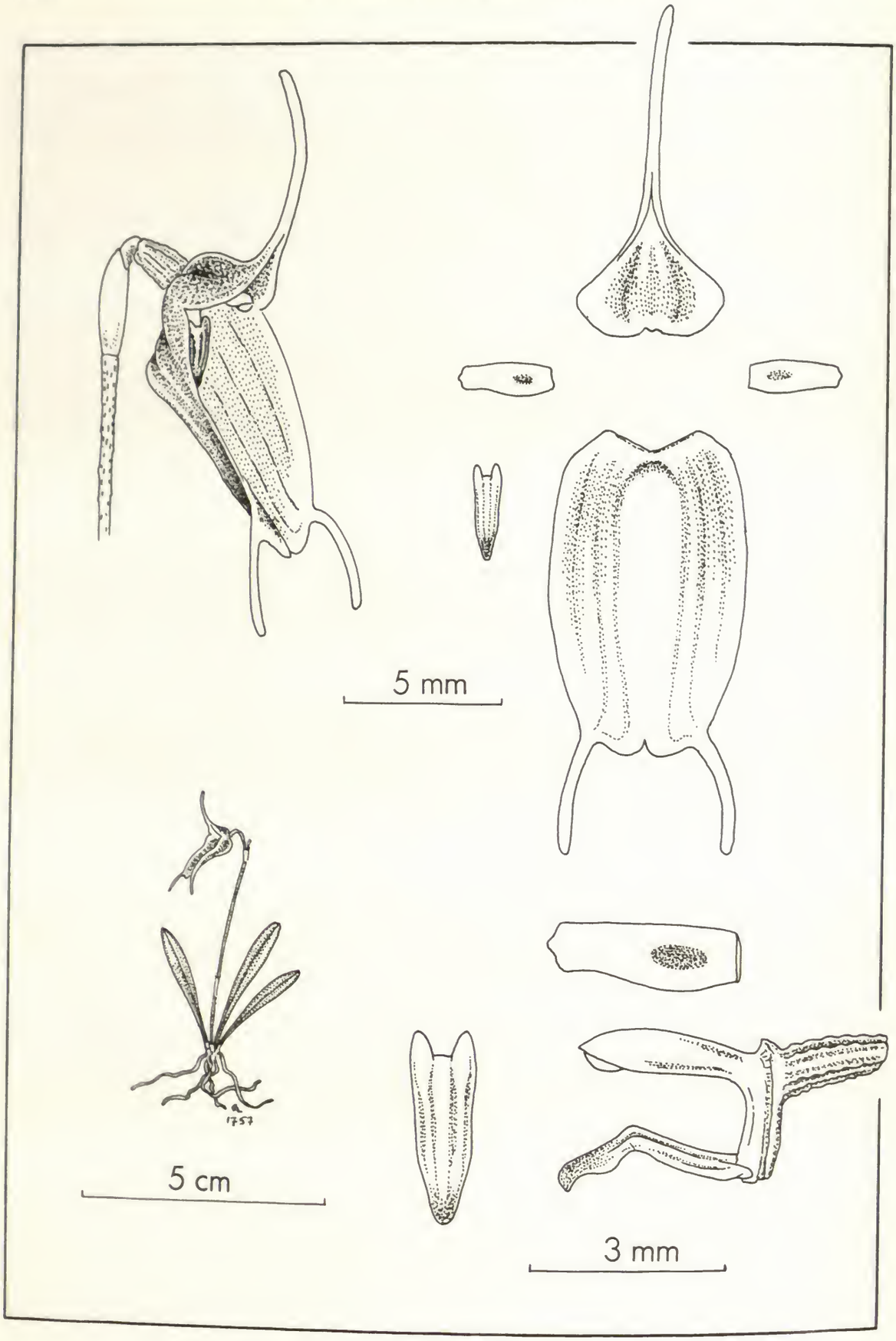


Plate 21. *Trisetella triglochin* (Rchb. f.) Luer

and *M. huebneri*.

The *T. triglochin* species-complex is recognized by the thick, narrow leaves, a smooth peduncle (occasionally slightly or sparsely scabrous), a synsepal with a mentum below the middle, and with tails of the lateral sepals usually not longer than the blade. The tails vary from slender to thickened to clavate in various populations. The tails usually emerge below the apex of the synsepal, but occasionally they emerge from the lateral margin of the apex,

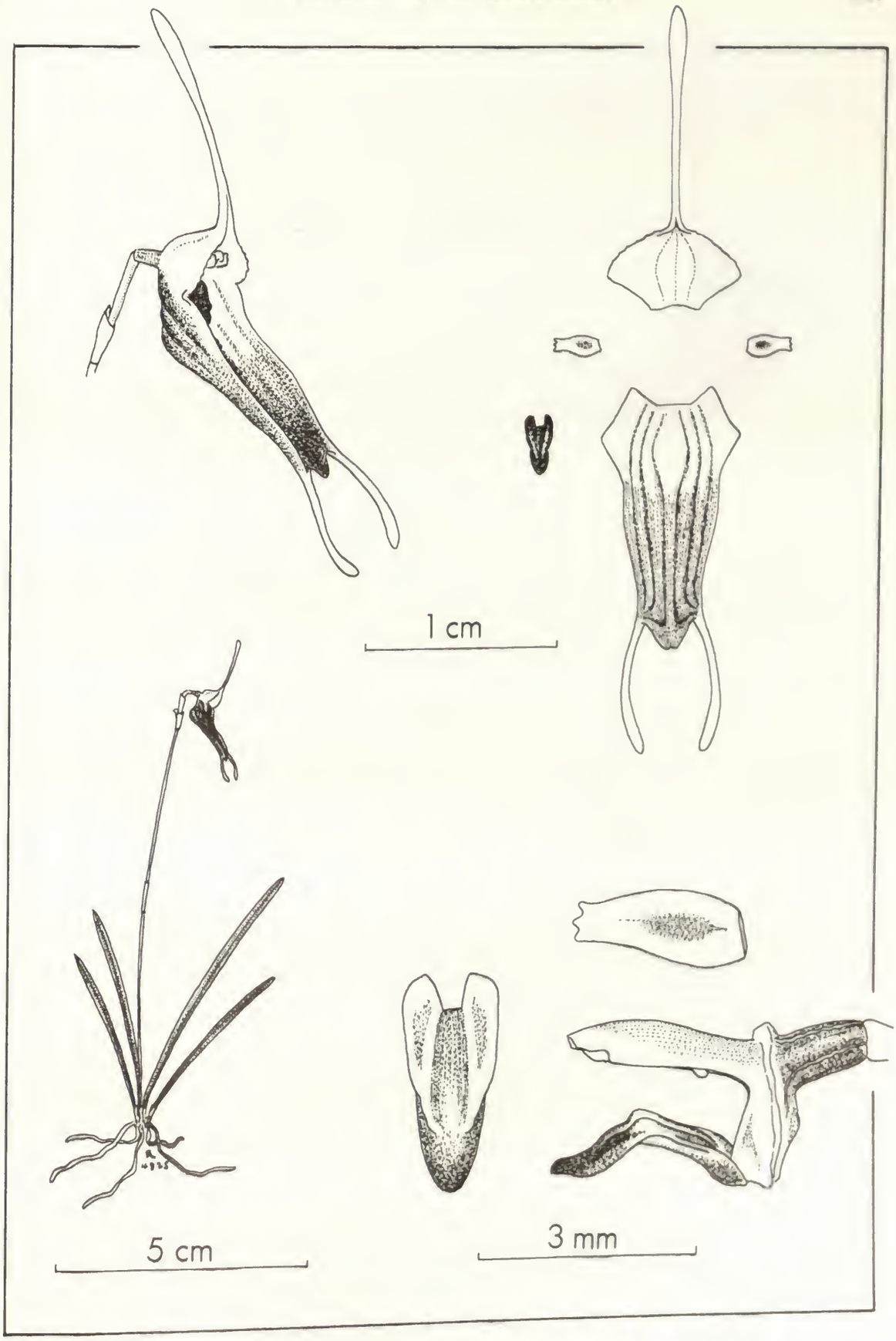


Plate 22. *Trisetella triglochin* (Rchb. f.) Luer

both positions sometimes occurring in the same population. The petals are more or less oblong with the truncate apex variably toothed. The lip is ovate and bicarinate, relatively constant in all the forms.

Each population varies to some degree from the next. There also appears to be some intergrading between populations of *T. triaristella* and *T. triglochin* both in Central America and in the Andes.

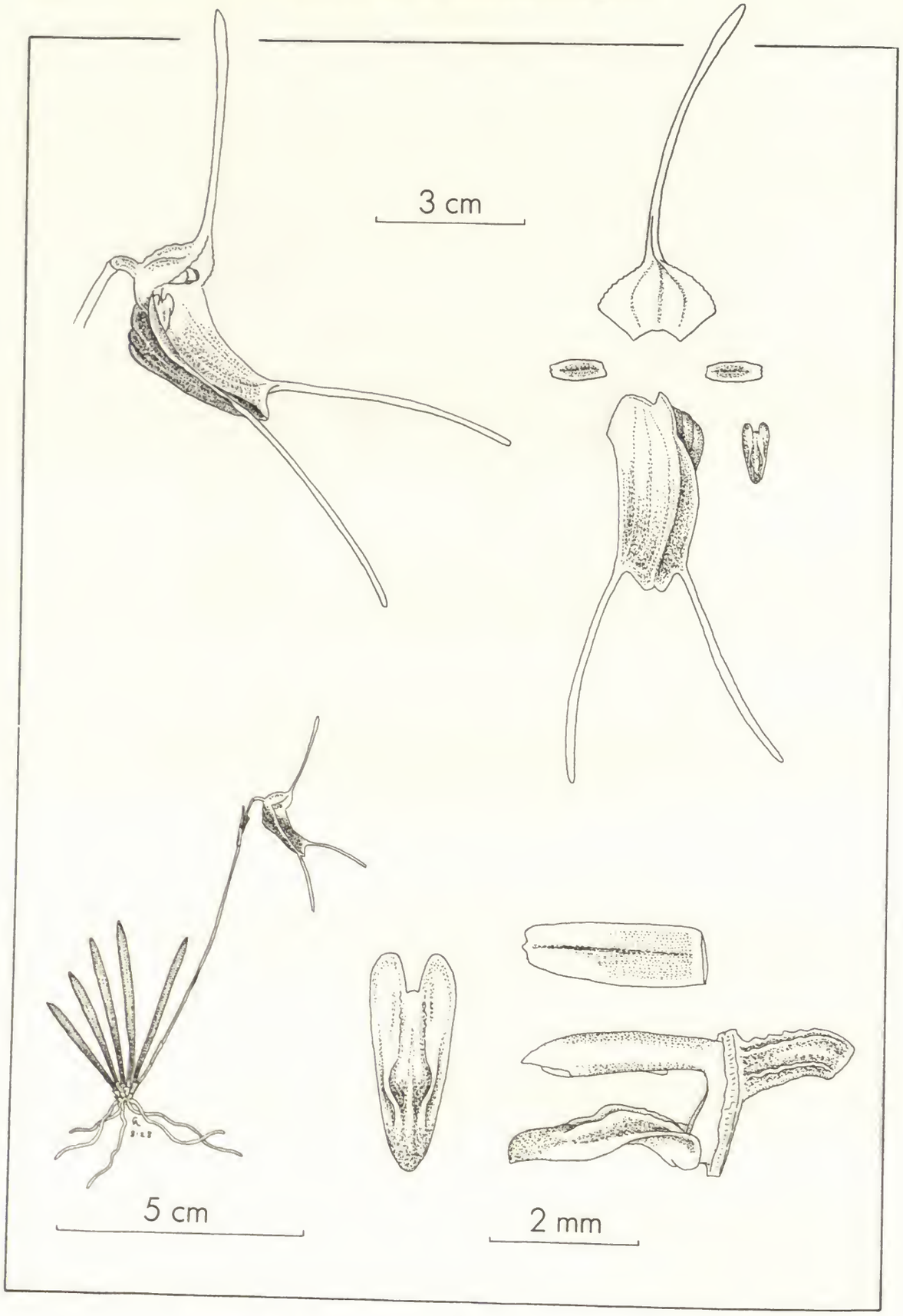


Plate 23. *Trisetella triglochin* (Rchb. f.) Luer

Woolward was aware of the variable, intergrading characters of the species. In her monograph of the genus *Masdevallia* in 1896, she reduced *M. tridactylites* to a synonym of *M. triaristella*. Her painting identified as *M. triaristella* is one of the many forms of *T. triglochin*.

In Costa Rica where the typical *T. triaristella* and *T. triglochin* grow together in the same trees, *T. triglochin* reaches its peak in flowering about a month earlier than *T. triaristella.*

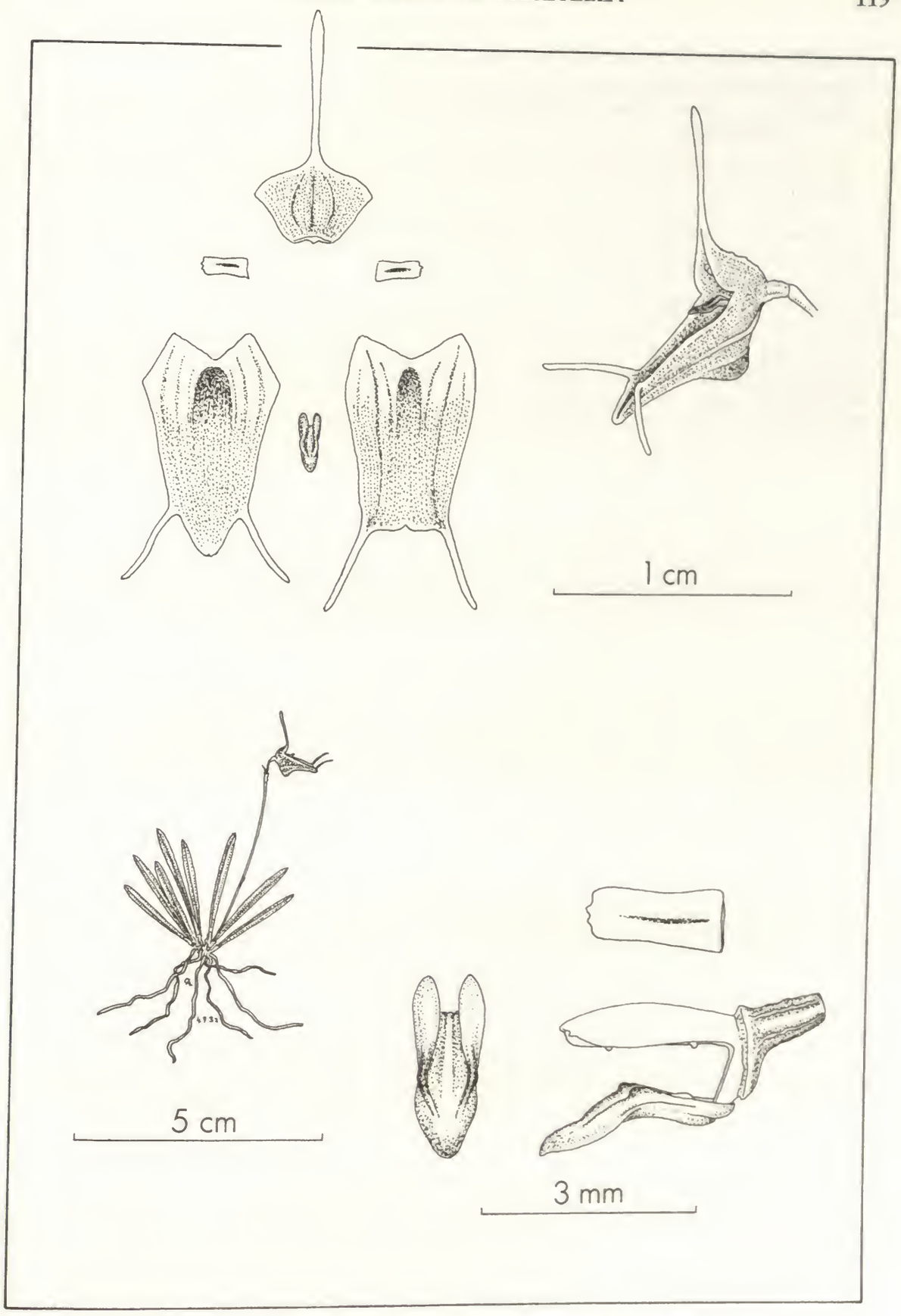


Plate 24. *Trisetella triglochin* (Rchb. f.) Luer

The *T. triglochin* complex is relatively frequent and widely distributed from Costa Rica through Panama, Colombia, Ecuador, Peru, Bolivia and Amazonian Brazil and Venezuela. The flowers of some populations in Colombia are probably the largest, while the flowers of some populations in Bolivia are probably the smallest. Within the range of this species-complex, very closely allied species can be recognized. Intergrading among the various taxa often makes positive determinations impossible.

Trisetella vittata (Luer) Luer, Phytologia 47: 58, 1980.

Bas.: *Masdevallia vittata* Luer, Phytologia 39: 233, 1978.

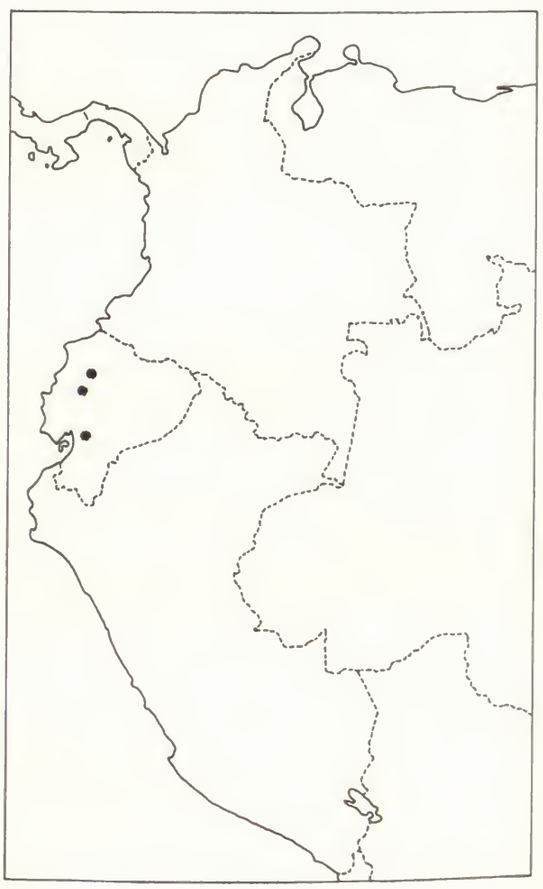
Ety.:From the Latin *vittatus*, "longitudinally striped," in reference to the prominently striped sepals.

Syn.: *Triaristella vittata* (Luer) Luer, Selbyana 2: 206, 1978.

Syn.: *Triaristellina vittata* (Luer) Rauschert, Repert. Spec. Nov. Regni Veg. 94: 459, 1983.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls 2-5 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, bluish green, purplish beneath, narrowly elliptical, acute to subacute, 20-33 cm long, 5-7 mm wide. **Inflorescence** a succession of 2-3 single flowers borne in a congested raceme by a slender, smooth, erect peduncle 3-4 cm long, with a bract near the middle, from low on the ramicaul; floral bracts 3-5 mm long; pedicel 5 mm long; ovary 1-2 mm long; **dorsal sepal** yellow with 3 prominent purple veins, transversely ovate, concave, with minutely ciliate margins, 3-4 mm long, 5.5-6 mm wide, connate to the lateral sepals for 2-3 mm to form a sepaline cup, the transversely obtuse apex abruptly contracted into an erect, stout, terete yellow tail 5-6 mm long; **lateral sepals** red-purple, prominently striped with darker red-purple along the veins, minutely red-pubescent within, connate 4-5 mm into an oblong, bifurcated, concave lamina 7-8 mm long, 7 mm wide expanded, the acute apices contracted into stout, yellow tails 3-5 mm long, the mentum broad, deep, obtuse, near the middle; **petals** translucent, suffused with purple medially, oblong-ovate, 2.75 mm long, 1 mm wide, the truncate apex tridentate; **lip** red-purple, ovate, 3-3.5 mm long, 1.25 mm wide, the apex rounded, thickened, the disc with two low pairs of longitudinal calli, the base cordate-cleft, hinged to the compressed apex of the column-foot; **column** purple, semiterete, 3 mm long, the foot 1.5 mm long.

ECUADOR: Prov. of Azuay: western slopes of the Andes, alt. 1900 m, Aug. 1974, collected by B. Malo, flowered in cultivation at Tarqui near Cuenca, 20 July 1977, *C. Luer 1756* (Holotype: SEL). Prov. of Pichincha: Río Tandayapi near Mindo, collected by A. Hirtz, flowered in cultivation 5 Mar. 1980, *C. Luer 5209* (SEL); cloud forest along the road between Quito and Tandapi, alt. 2100 m, 31 Mar. 1984, *C. Luer, S. Dalström, T. Höijer, J. Kuijt & A. Hirtz 9818* (MO); cloud forest between Calacalí and La Liberia, alt. 2100 m, 7 Apr. 1984, *C. Luer, S. Dalström, T. Höijer & A. Hirtz 10008* (MO).



This little species is widely distributed on the western declivities of the Andes of central Ecuador where it has been found on several occasions. It is easily recognized by the prominently purple-striped sepals with the short, thick tails of the lateral sepals produced from the apices.

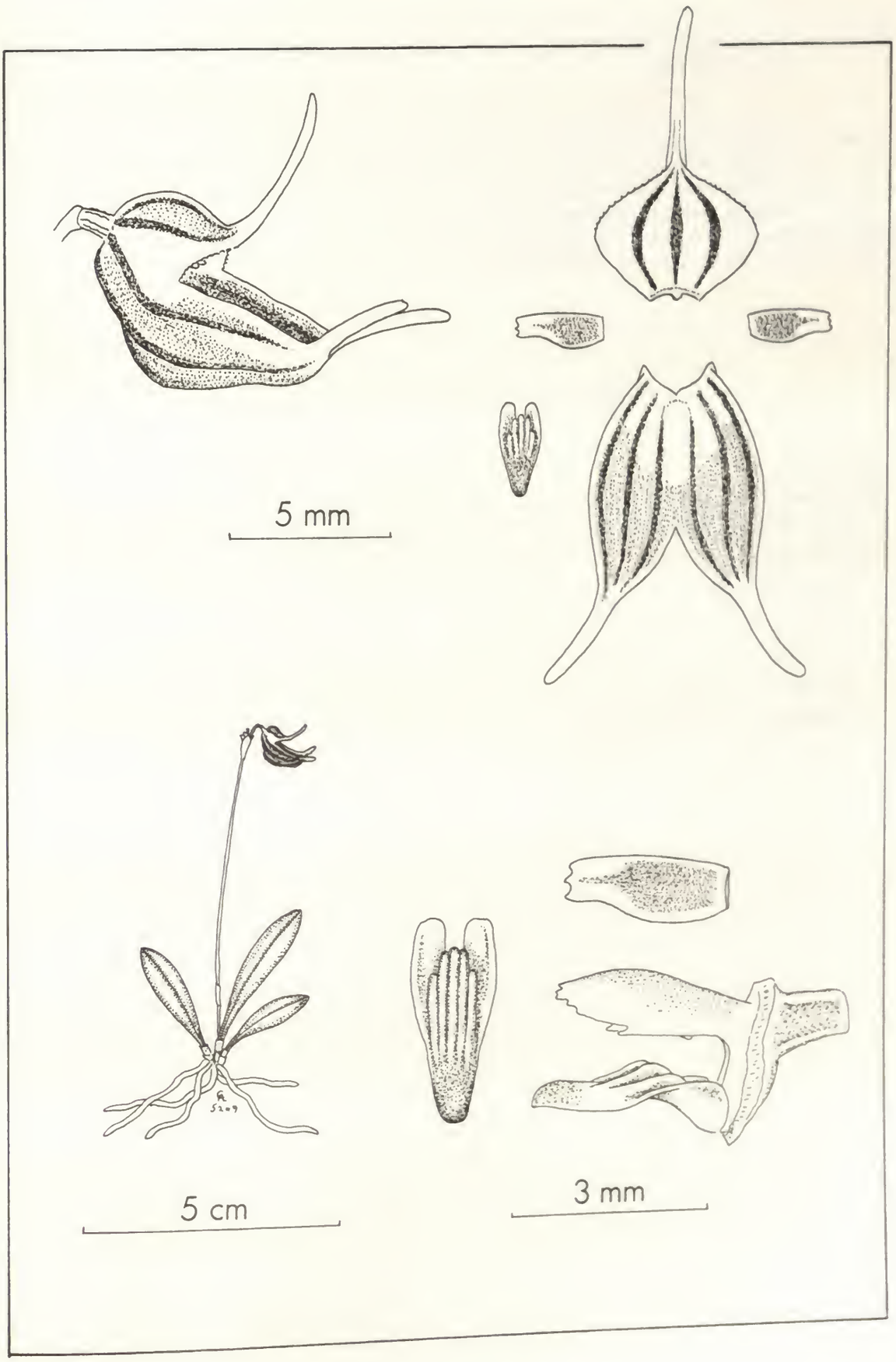


Plate 25. *Trisetella vittata* (Luer) Luer

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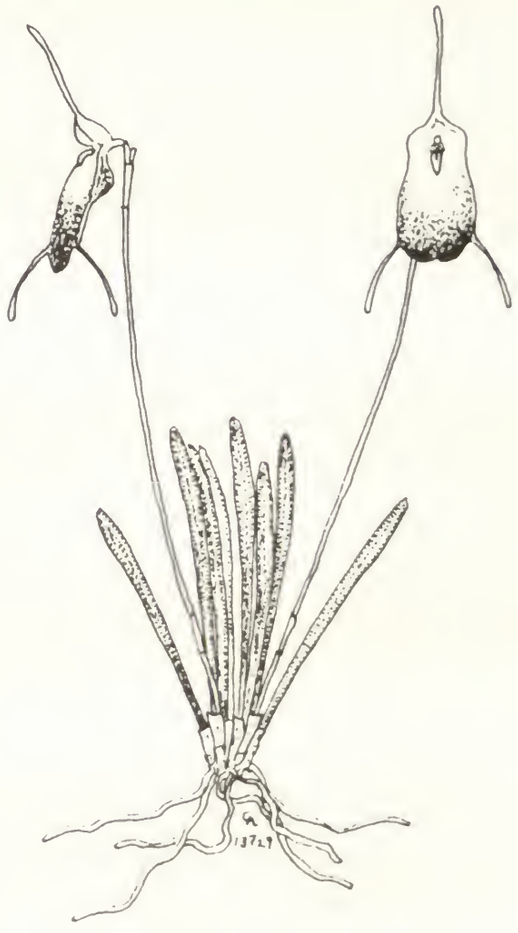


ADDENDUM TO PORROGLOSSUM

The following new species of *Porroglossum* Schltr. has been identified since the publication of *Systematics of Porroglossum* in *Icones Pleurothallidinarum* No. 4 in 1987, and the addenda in No. 5 in 1988.

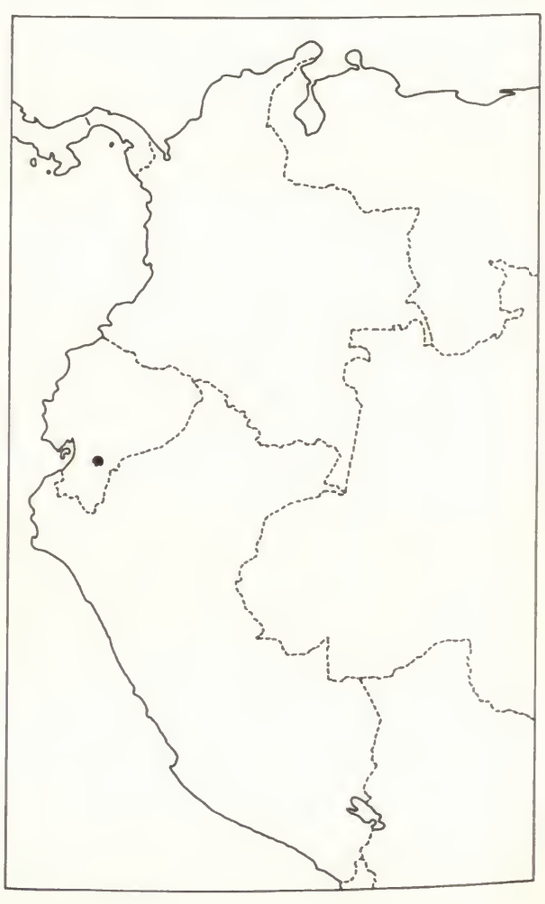
Porroglossum jesupiae Luer, sp. nov.

Ety.: Named in honor of Ann Lauer Jesup of Bristol, Ct., who discovered this species.

Species haec *P. dactylo* Luer similis, sed foliis obovatis obtusis, flore resupinato, sepalorum caudis erectis guttatis longioribus et labello majore differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls blackish, slender, erect, 5-10 mm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, thickly coriaceous, finely verrucose, 3-6 cm long including a petiole 1-2 cm long, the blade elliptical-obovate, obtuse, 11-16 mm wide, the base cuneate into the slender petiole. **Inflorescence** a congested, successively few-flowered raceme, the flowers resupinate, borne by an erect, smooth, slender peduncle 7-8.5 cm long, with 3 closely applied, distant bracts, from low on the ramicaul; floral bracts tubular, imbricating, 4-7 mm long; pedicel 4-7 mm long; ovary twisted 180°, pitted, 4.5 mm long; **sepals** purple with darker veins, glabrous, the middle sepal ovate, deeply concave, 9 mm long, 5 mm wide unexpanded, connate to the lateral sepals for 5 mm, the acute apex contracted into a thick, ascending tail 8 mm long, yellow with purple spots, the lateral sepals transversely oblong, 6 mm long, 8 mm wide, connate to each other 5 mm behind the free apex of the column-foot, the broadly obtuse apices abruptly contracted into thick, erect, tails 12 mm long, also yellow with purple spots; **petals** yellow, ovate-oblong, 4.5 mm long, 1-3 mm wide, narrowed below the thickened apex, both margins with an acute process in the middle third; **lip** lowermost, white, suffused with purple at the base, with purple markings above the base, ciliate on anterior margins, the blade obovate, thick, truncate, 6 mm long, 4 mm wide, the lateral angles rounded, the apex a short, acute, sulcate apiculum, pubescent within the sulcus, the base with a low, pyramidal callus, deflexed below into a straplike claw bent with tension around the free apex of the column-foot; **column** stout, semiterete, 2.5 mm long, the foot 5 mm long.

ECUADOR: Prov. of Morona-Santiago: epiphytic in felled tree in a pasture beside the road above Río Calagrás, alt. 1550 m, 19 Jan. 1989, *C. Luer, J. Luer, P. Jesup & A. Jesup 14007* (Holotype: MO).



This species of section *Torta*, was discovered growing on a mossy old log in a cow pasture by Ann Jesup. It is similar to *P. dactylum* and *P. dalstroemii*, but *P. jesupiae* is readily distinguished by the larger, resupinate flower with long, erect, spotted tails of the lateral sepals. The ovary of all three of these allied species is twisted 180°, placing the lip lowermost in the flower. The lip remains uppermost in the other two species, probably from an additional backward bending of the pedicels.

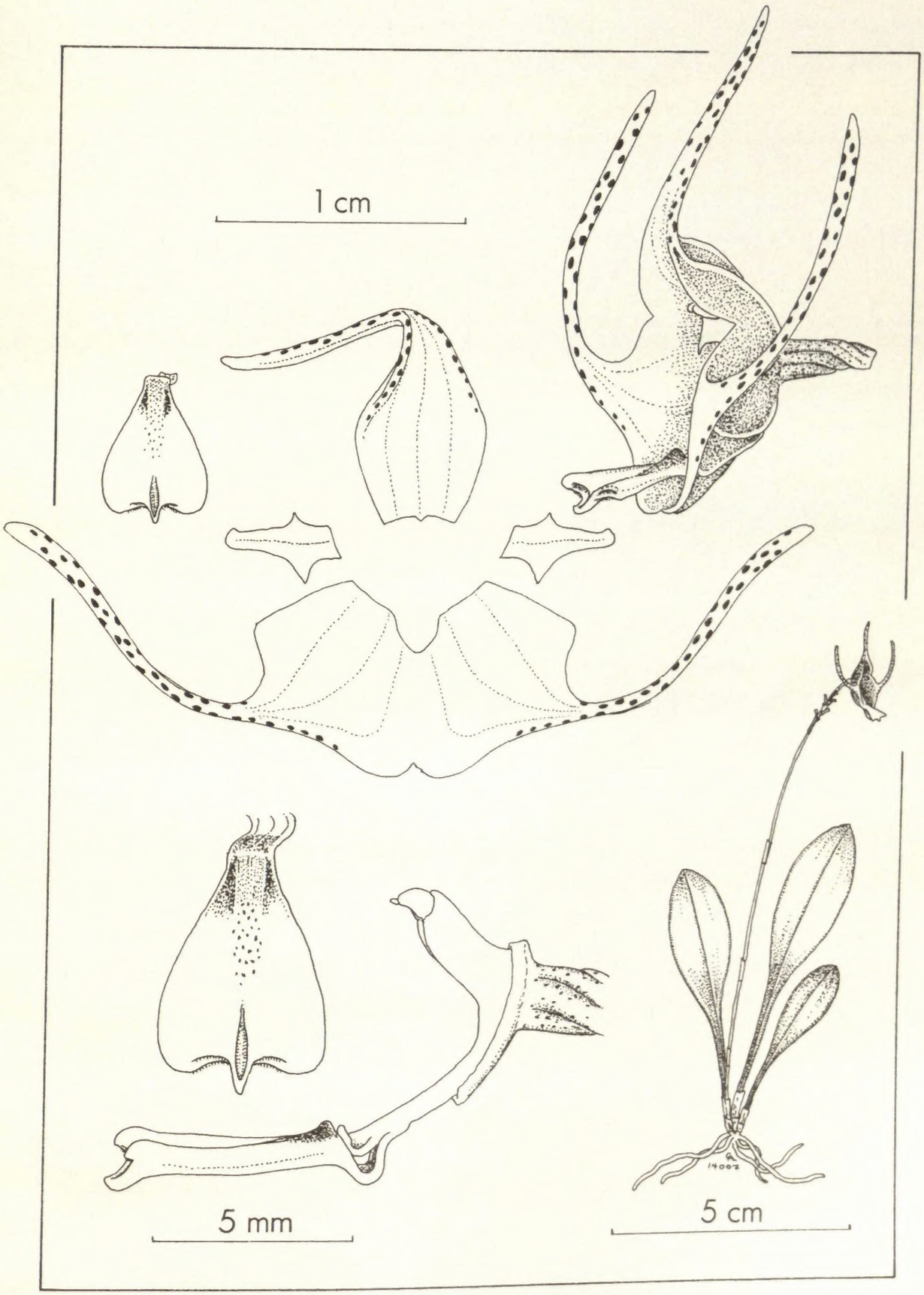


Plate 32. *Porroglossum jesupiae* Luer

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